

LEUCOSPIZA NOVÆ-HOLLANDIÆ, Gmel.

Falco novæ-hollandiæ, Gmel. S. N. i. p. 264.*Astur novæ-hollandiæ*, Cuv. Règ. An. 320; Vig. & Horsf. Linn. Trans. xv. p. 179; Gould, Birds of Austr.; Schleg. Valkv. t. 11.*Falco albus*, Shaw, Gen. Zool. vii. 92; White's Voy. p. 250.*Astur albus*, Sw. Class. of B. ii. p. 215.*Sparvius niveus*, Vieill. N. Dict. d'Hist. Nat. p. 338.*Dædation candidum*, Less. Tr. d'Orn. p. 66.*Falco leucaëtus*, Forst. Descr. Orn. p. 70; Icon. ined. 35.*Astur rayii*, Vig. & Horsf. L. Tr. xv. p. 180.*Falco clarus*, Lath. Ind. Orn. Suppl. p. xiii.*Astur (Leucospiza) novæ-hollandiæ*, Kp. Falc. 197.

This species is also found in New Guinea, but probably only accidentally. There is no doubt that it breeds in the plumage of youth, which has bands. It is also said to prey upon fish.

February 14, 1867.

John Gould, Esq., F.R.S., V.P., in the Chair.

Mr. P. L. Slater read an extract from a letter from Mr. W. T. Blanford, of the Indian Geological Survey, containing a notice of the interesting fact that a species of *Platanista* is common in the river Irrawaddi, probably differing from the species of the Indus and the Ganges.

Mr. P. L. Slater called the attention of the Meeting to several recent additions to the Society's Menagerie, amongst which were:—

1. A Kagu (*Rhinochetus jubatus*), brought to this country in the ship 'Curaçoa,' and acquired by purchase for the Society on the 5th inst. This made up two pairs of this scarce bird now in the Society's Gardens.

2. An additional example of the Mooruk or Bennett's Cassowary (*Casuarius bennetti*), presented by Commodore Sir William Wiseman, Bart., R.N., along with other valuable birds on the 11th inst.

Mr. Slater took this opportunity of also calling attention to the young Cassowary (*Casuarius galeatus*) hatched in the Gardens on the 22nd of June, 1866, which was still in good health and promised to make a fine bird. This was believed to be the only instance of the successful reproduction of this bird that had ever taken place in Europe.

Prof. Newton communicated a notice of a picture which he supposed to represent the Didine Bird (*Didus*, sp.) of the island of

Bourbon, being the same picture as that exhibited by Mr. Tegetmeier at a Meeting of the Society on the 10th of April, 1866*.

This paper will be printed entire in the Society's 'Transactions.'

The following papers were read :—

1. Notice of *Lutronectes whiteleyi*, an Otter from Japan.

By Dr. J. E. GRAY, F.R.S., V.P.Z.S., F.L.S., &c.

Mr. Henry Whiteley, junior, has brought with him from Hakodadi, in Japan, two specimens of a young Otter and their skulls. They appear distinct from the other Otters that are in the British Museum and from all the species I have described in my "Monograph of *Mustelidae*," published in the 'Proceedings of the Society' for 1865. They seem to belong to a peculiar group, which may be called

LUTRONECTES.

The muzzle bald, oblong transverse, with a straight upper and lower edge; the upper edge of the nostril bald. Ears oblong, hairy. Feet rather large; toes strong, webbed, covered with hair above, and bald beneath; toes and palm-pads well developed, those of the palm separated from the toes by a broad bald space; claws strong, acute. Tail conical, covered with hair. Skull elongate; orbit very obscurely defined behind; the flesh-tooth with a large internal lobe about two-thirds of the length of the outer edge.

The toes in this genus are strong, thick, and well webbed, rather larger than in the typical Otters.

The skulls are not quite the normal skulls of the genus *Lutra*, as they have scarcely an indication of any tubercle defining the upper hinder portion of the orbit, and only a very obscure angle on the front of the zygomatic process, defining, or rather separating the lower hinder part of the orbit from the mastoid cavity.

In this respect the skulls are nearly intermediate in form between the skulls of *Hydrogale* and *Barangia*: they have the hinder edge of the orbit above and below rather more defined than in *Hydrogale*, and yet less so than in *Barangia*, where the protuberances that define the orbit behind are much smaller than in *Hydrogale*.

The genus differs from *Hydrogale* in the skin between the pads being bald as in the true Otters (*Lutra*). It agrees with *Hydrogale* and *Lutra* in the muzzle being entirely bald and square between the nostrils; while in *Barangia* the muzzle is entirely covered with hair.

The nose of the skull is short; the nasal aperture very oblique, edged on each side by the narrow intermaxillaries, which are continued up and separate the front half of the nasal from the maxillæ; the infraorbital foramen is very large; the nasal extends back as far as the hinder edge of the maxilla on its sides.

* See P. Z. S. 1866, p. 201.

LUTRONECTES WHITELEYI.

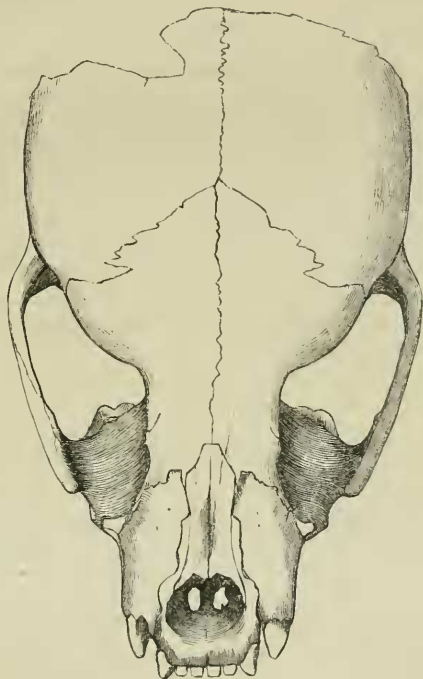
Dark brown; cheeks, lips, chin, and throat greyish white.

? *Lutra vulgaris*, Temm. Fauna Japonica, 35; Schrenck, Reisen in Amurlande, 43.

Hab. Japan.

Like many other Otters, these so closely resemble the Common European Otter that I am not surprised that M. Temminck should have confounded them with that species.

Length of body and head $17\frac{1}{2}$, of tail 10 inches.



Lutronectes whiteleyi.

Skull:—Length about 4 inches (back imperfect); width at back of zygomatic arch 2 inches 1 line; length of palate 1 inch $7\frac{1}{2}$ lines, of tooth-line 1 inch $7\frac{1}{2}$ lines; width at the upper tubercular grinder 1 inch 5 lines.

The two skulls slightly differ in the size of the teeth and in the width of the palate.

I have great pleasure in naming this species after Mr. Henry Whiteley, junior, of Woolwich, who brought it from Hadodadi in Japan with many other interesting animals, and who has become a martyr to science in the course of his labours as a natural-history

collector. Some ardent "anthropologists" having requested him to procure them some Aino's skulls, he tried to procure them, was informed against by a foreign consul, who did not appreciate science, imprisoned in Japan, and then sent home in confinement. When I first saw him on his return he was almost a living skeleton, in a most pitiable state of bodily and mental prostration. Under good nourishment and nursing he has slowly recovered, and is about to proceed to the Peruvian Andes to continue his labours as a zoological collector.

I may observe that there appear to be two very distinct Otters found in Formosa.

Two imperfect skulls sent by Mr. Swinhoe certainly belong to two very distinct species. The most perfect skull, which wants the cutting-teeth, belongs to the first section of the genus, as defined in my paper above referred to, with moderate-sized tubercular grinders, and a moderate-sized inner lobe to the flesh-tooth.

The second, on the contrary, which only consists of the front portion of the upper jaw, with the teeth in change from the milk to the permanent series, has a very large square tubercular grinder and a very large rounded internal lobe to the flesh-tooth, as in the second section, which I have called *Hydrogale*, in the same monograph.

I propose to indicate this species by the name of *Lutra* (*Hydrogale*) *swinhoei*. It is easily characterized by the small size of the upper cutting-teeth, the series forming only a width of $4\frac{1}{2}$ lines; while the series of most other Indian Otters occupy 6 lines or half an inch, or sometimes rather more.

2. On a New Australian Parrakeet.

By JOHN GOULD, F.R.S. &c.

Mr. Coxen, of Brisbane in Queensland, having forwarded to me a correct drawing of a small species of Parrakeet, new to the Australian avifauna, I hasten to bring it under the notice of the Zoological Society, and to name the bird *Cyclopsitta coxeni*, in honour of the gentleman who has been the first to make us aware of the existence of the species. In size and in some other respects it is nearly allied to the *Cyclopsitta diophthalma* of Mysol, but differs in the absence of scarlet on the crown and the smaller extent of that colour on the cheeks.

CYCLOPSITTA COXENI, Gould.

General plumage green; across the forehead a narrow band of red, which unites through the lores with a large patch of the same hue on the ear-coverts, beneath which is a patch of blue; primaries margined with blue; a patch of red on the tertiaries near the body; tail short and wholly green; bill very stout and of a horn-colour.

Total length $7\frac{1}{2}$ inches, bill $\frac{5}{8}$, wing $3\frac{5}{8}$, tail 2, tarsi $\frac{1}{2}$.

Remark.—In the note accompanying the drawing, Mr. Coxen states that two examples of this bird were procured by Mr. Waller

from a sawyer, who found them in a scrub on the east coast, where he was at work, and where he observed the species moving about in small flocks of from fifteen to twenty in number, and by no means shy.

3. Notes upon some Parrots living in the Society's Menagerie. By P. L. SCLATER, M.A., Ph.D., F.R.S., Secretary to the Society.

(Plate XVI.)

In preparing for press a new edition of the List of Vertebrated Animals in the Society's living collection, I have made some notes upon certain species of Parrots now represented in the Society's extensive living series of these birds, which may be worthy of record.

A Maccaw purchased for the Society at Liverpool on the 23rd of August last appears to be quite distinct from the Military Maccaws previously in the collection, differing materially both in its larger size and in the enormous width of the lower mandible. In these birds, therefore, it appears that we have now living side by side in the Parrot-house examples of both the species of "Military Maccaws" figured by Levaillant in his great work on Parrots, the existence of which has been so often denied. That the larger bird, with its enormously crass under mandible, is specifically different from the smaller and more common one can, I think, hardly be denied by those who have seen them both together, although there is but slight difference in the plumage, as far as I can tell from examination of the living birds. The name *militaris* must, I think, be reserved for the smaller of the two species (*L'Ara militaire*, Levaill. Perr. pl. 4), whilst the larger (*Le Grand Ara militaire*, Levaill. pl. 6) must be called *Ara ambigua* (Bechst.), Bechstein's term having been founded upon Levaillant's last-mentioned figure.

The two species may be diagnosed as follows:—

+ *ARA AMBIGUA*: *major*: *rostro majore et mandibula præcipue multo magis crassa*: *pileo obscurius viridi et flavo variegato*: ex Mexico.

+ *ARA MILITARIS*: *minor*: *rostro modico*: *pileo unicolore læte viridi*: ex Nov. Granada: rep. Æquat. et Peruvia, inter Andes.

I have no doubt that the smaller is the South American bird, as I have an example of it in my own collection from Bogota. I conjecture, therefore, that the larger one is from Mexico, as Swainson and others have recorded the occurrence of *Ara militaris* in that country.

Another very interesting recent addition to the Society's collection consists of two fine examples of the beautiful Green-tailed Lory of San Cristoval, Salomon Islands (*Lorius chlorocercus*), described by

Mr. Gould in the Society's 'Proceedings' for 1856 (p. 137). The typical specimen of this bird, now in the British Museum, obtained by Macgillivray during the voyage of the 'Herald,' was, I believe, previously unique. The living specimens in question were brought to this country in the ship 'Curagoa,' and acquired by purchase for the Society on the 5th inst. I exhibit a sketch by Mr. Wolf (Pl. XVI.) representing this species.

I have already on more than one occasion spoken of the series of Cockatoos in the Society's Gardens, which is very full and complete*. In my last communication on this subject I proposed to divide the White Cockatoos into two sections, characterized by the form of the crest, which in the one case is pendent, in the other recurved at its extremity. In this it appears that, as I have lately become aware, I had been anticipated by Dr. Schlegel, although I have not yet been able to consult his original article upon this subject†. But in Dr. Schlegel's more recent paper upon the same subject‡, he has fallen into what every one who is acquainted with our living series of *Psittacidae* must allow is a very great error, in stating that *Cacatua ducorpsii* and *Cacatua ophthalmica*, as described and figured by me in the articles above referred to, are mere varieties of *C. triton*! Dr. Schlegel is so kind as to add that my descriptions and figures of these birds are "*de nulle utilité pour la science*." To this I have only to reply that I regret to find he has not understood them better. It is true no exact dimensions are stated in my notes; but the birds described were (and still are, I am happy to say) *alive*, and it is not always easy to take exact measurements of living birds. But on reference to my second paper (P. Z. S. 1864, p. 188) it will be found that I have given what I must maintain is an exact and very recognizable diagnosis of *C. ophthalmica*, ending with "*crassitie vix minore quam in C. cristata*," which, I consider, is a sufficiently precise account of its size. And in the table above the diagnosis in the same paper I have classed *C. ducorpsii* amongst the smaller section of the group, along with *C. sanguinea* and *C. philippinarum*, with which it agrees in size. No naturalist, in fact, after seeing specimens of *C. ophthalmica* and *C. ducorpsii*, could regard these two birds as specifically identical. The former is a large species, closely allied to *C. cristata*, as I have already pointed out. The latter is a small species, very closely allied to *C. sanguinea* of Gould, and to be united to that species, if not allowed to stand alone. Neither do I in the least believe that there are any grounds for uniting *C. ophthalmica* to *C. triton*, whatever may be the length of Dr. Schlegel's "series" of specimens of this bird.

The fact is that in this, as in many other cases, Dr. Schlegel is misled by the idea that there are no other species of birds in existence except those represented in the Leyden Museum. In a similar frame of mind he has denied the existence of many other excellent

* See P. Z. S. 1862, p. 141, et 1864, p. 187.

† Jaarb. v. h. Genootschap Natura Artis Magistra v. h. j. 1861.

‡ "Notice sur les Cacatoos blancs a houppes jaunes," par H. Schlegel (Ned. Tijdschr. v. d. Dierk. 1865, p. 318).

species, until he has obtained examples of them, when their validity is readily acknowledged*.

As regards species of which our excellent Foreign Member has authenticated specimens, every one would wish to hear his views, and will respect them, although he may not agree with them. But it would be certainly more prudent not to condemn in this wholesale manner species with which he is not acquainted autoptically, and described by naturalists in other countries who occasionally have the advantage of examining specimens not yet possessed by the Leyden Museum.

4. A List of Species of Marine Mollusca found in Port Jackson Harbour, New South Wales, and on the adjacent Coasts, with Notes on their Habits, &c. By GEORGE FRENCH ANGAS, F.L.S., C.M.Z.S., &c.—Part I.

[Those species marked with an asterisk (*) have been described from specimens in my own collection.—G. F. A.]

Class CEPHALOPODA.

Fam. OCTOPODIDÆ.

Several species of *Octopus*, including one of very large size (together with species of *Cistopus*, *Pinnoctopus*, *Eledone*, &c.), are occasionally to be met with in Port Jackson. Unfortunately but little attention has hitherto been paid to animals of this class in Australia. A careful examination and description of all the existing species would, however, well repay the researches of a naturalist in that part of the world.

Fam. ARGONAUTIDÆ.

1. ARGONAUTA ARGO.

Argonauta argo, Linn.; Reeve, Conch. Syst. v. 2, pl. 300.

Very large shells of this species of Argonaut are occasionally washed on shore upon the sandy beaches along the coast of New South Wales. It seems to be identical with the *A. argo* of the Mediterranean. Length 10 inches.

2. ARGONAUTA ORYZATA.

Argonauta oryzata, Meusch. Mus. Gev. 252. n. 133.

A. tuberculata, Shaw, Nat. Misc. xxiii. t. 995.

Small examples of *A. oryzata* are now and then found about Port Jackson, and on the beach at Coodgee and Botany Bay. It is in

* E. g. *Dacelo tyro*, G. R. Gray, stated (Musée d. P.-B. *Alcedines*, p. 20) to be = *D. gaudichaudi*! *Tanysiptera nympa* united (*l. c.* p. 43) with *T. dea*! and both subsequently acknowledged to be valid (Ned. Tijdschr. 1865, pp. 250 et 339).

Spencer's Gulf, in South Australia, where this species attains its maximum size, some of the shells measuring from 9 to 11 inches. The largest Port Jackson specimen I have seen does not exceed 5 inches.

Amongst the decapodous Cephalopoda, species of *Loligopsis*, *Onychoteuthis*, *Loligo*, *Sepia*, &c. occur on the coast of New South Wales, but at present they appear to be unidentified.

Fam. AMMONIIDÆ.

3. AMMONIA (LITUUS) LÆVIS.

Litus lævis, Gray, Cat. Moll. Brit. Mus. (Cephalopoda), pt. i. p. 116.

Spirula lævis, Zool. Voy. Samarang, Moll. pl. 4. f. 2.

The shells of *Litus* are thrown ashore, after easterly storms, on the sandy beaches outside Port Jackson Heads, especially at Bondi Bay, in company with *Ianthinæ*, *Veellæ*, and other pelagic creatures. On one occasion I was fortunate enough to meet with the perfect animal enclosing the shell.

Of the pelagic class Pteropoda, the dead shells of several species are cast on shore along the outer beaches, amongst which are those of *Cavolina gibbosa*, Rang, *C. globulosa*, Rang, and *Styliola subulata*, Quoy et Gaim.

Class GASTEROPODA.

Suborder PROBOSCIDIFERA.

Fam. MURICIDÆ.

4. MUREX (PTERONOTUS) ACANTHOPTERUS.

Murex acanthopterus, Lam. Anim. sans Vert. ix. p. 577; Reeve, Conch. Icon. Murex, pl. 16. f. 64.

Of this very rare and elegant species two specimens only were found:—one, an adult example and much beach-worn, at Middle Harbour; the other, a young living specimen, containing the animal, at Watson's Bay, on the reef at low spring tide.

It belongs to the same group of *Murices* as the South Australian *M. triformis*, Reeve. Length 2 inches 3 lines.

5. *MUREX (PTERONOTUS) ANGASI.

Typhis angasi, Crosse, Journal de Conch. 1863, p. 86, pl. 1. f. 2.

This shell, described and figured by M. Crosse, is not a *Typhis*, but a *Murex*, belonging to the same group as *Murex uncinarius*, Lam., from the Cape of Good Hope. It is to be met with under rocks and stones at low water in Watson's Bay, and Middle and North Harbours. Length 10 lines.

6. MUREX (CHICOREUS) PALMIFERUS.

Murex palmiferus, Sowerby, P. Z. S. 1840; Reeve, Conch. Icon. Murex, pl. 4. f. 20.

This species, which is not uncommon in Woolloomooloo Bay and in several localities near Port Jackson Heads, adhering to rocks at very low tides, may be easily recognized by its short compressed fronds, ranging along the varices and the outer lip, so as to form a connected leaf-like frill. Length 2 inches.

Subfam. FUSINÆ.

7. CANTHARUS (TRITONIDEA) ASSIMILIS.

Buccinum assimile, Reeve, Conch. Icon. (*Buccinum*) pl. 12. f. 90.

Under stones at low water, Watson Bay. A pretty little species, transversely ridged, and clouded with purplish brown. Length 7 lines.

8. *CANTHARUS (TRITONIDEA) UNICOLOR.

Tritonidea unicolor, Angas, Proc. Zool. Soc. 1867, p. 110.

A pale fulvous shell, longitudinally ribbed, and transversely ridged throughout with raised striæ. Under stones at very low spring tide at Camp Cove, Port Jackson. Length 6 lines.

9. *TROPHON HANLEYI.

Trophon hanleyi, Angas, Proc. Zool. Soc. 1867, p. 110.

The whorls of this species are broadly ribbed, sharply nodulous in the middle, and encircled throughout with rough scabrous ridges. It is of a uniform brownish colour, with a white line surmounting the crown of the angular nodules. Under stones at low water. Length 1 inch 2 lines.

10. *TROPHON PAIVÆ.

Trophon paivæ, Crosse, Journ. de Conch. 1864, p. 278, pl. 11. f. 7.

A broadly ribbed species encircled with scabrous ridges, with the canal somewhat produced and recurved; toothed on the inner edge of the outer lip, and deep purple or yellow within. Under stones, Port Jackson. Length 1 inch.

This species occurs also along the shores of Yorke's Peninsula, South Australia.

Fam. TRITONIIDÆ.

11. TRITONIUM AUSTRALE.

Triton australis, Lam. Anim. sans Vert. ix. p. 625.

Murex tritonium-australe, Chemn.

M. nereis (pars), Dillwyn; Reeve, Conch. Icon. Triton, pls. 4, 5. f. 12 a, 12 b.

This noble species is to be met with on the muddy edges of rocks and reefs laid bare at very low spring tides. Farm Cove, Vaucluse Bay, and the vicinity of the Heads are its favourite localities. There are two varieties of this species, the one tinged with violet, the other with orange. Length from 4 to 5 inches. A specimen obtained in Middle Harbour measured upwards of 8 inches.

12. TRITONIUM FUSIFORME.

Triton fusiformis, Kiener, Iconog. Coq. viv. p. 36, pl. 5. f. 2.

T. fusiforme is generally distributed, dwelling amongst the rocks in the various bays of Port Jackson. It is a solid, tubercled shell, with an elevated spire, the surface being covered with raised granulated striae, from which the epidermis springs in short curved bristles. Fine large specimens measure $2\frac{1}{4}$ inches in length.

13. TRITONIUM (GUTTURNIUM) EXARATUM.

Triton exaratus, Reeve, Conch. Icon. *Triton*, pl. 13, sp. 50. f. a, b.

This characteristic species is of somewhat rare occurrence. The canal is rather long, and the transverse ridges of the shell stand out boldly, the whorls being peculiarly flat and indented at the sutures. The epidermis forms a long fringe-like frill running along the summits of the varices. Specimens about half the size of the Port Jackson ones are found at Moreton Bay, and a still smaller variety, more or less banded, occurs in Botany Bay. Length 2 inches 3 lines; Botany Bay specimens 13 lines.

14. TRITONIUM (SIMPULUM) OLEARIUM.

Murex olearium, Linn.

M. costatus, Born.

M. parthenopus, Dillw.

Triton succinctus, Lam.

T. lyratum, King, MS. Australian Museum.

This fine species from Port Jackson bears too strong an affinity to the *T. olearium* of Linnæus (which is an inhabitant of the Mediterranean) to allow of its being described as a distinct species. On a careful comparison of specimens from both localities no specific differences present themselves, although the epidermis is more diffuse on those found in Port Jackson. It occurs also at Moreton Bay. Length $4\frac{1}{2}$ inches.

15. TRITONIUM (CABESTANA) SPENGLERI.

Murex spengleri, Chemn.; Reeve, Conch. Icon. pl. 11. f. 36.

Triton spengleri, Lam. Anim. sans Vert. ix. p. 627.

A common species amongst the rocks in Port Jackson, and along the reefs outside the Heads. It is allied to *T. barthelemyi*, Bernardi, and *T. waterhousei*, Ad. & Angas, which occur in South Australia,—also to *T. cutaceum* of the Mediterranean. It ranges from Moreton Bay to Tasmania, and is also found in New Zealand. A very small variety is found in Botany Bay, only an inch long. Length 4 inches.

16. TRITONIUM (CABESTANA) BOLTENIANUM.

Tritonium boltenianum, A. Adams.

A very interesting species, somewhat allied to *T. spengleri*, but smaller, more ponderous and without varices. The young shells are peculiarly inflated, and banded inside with dark purple ridges.

It is very rare, the few specimens known having been obtained on the rocks at Long Bay. Length 2 inches.

17. TRITONIUM (CABESTANA) DOLIARIUM.

Triton doliarius, Lam. Anim. sans Vert. vi. p. 641.

T. africana, A. Ad. (Ichaboe).

A South African species, of which a few examples, evidently conspecific, have been found along the coast of New South Wales. Length 1 inch 6 lines.

18. BURSA (APOLLON) LEUCOSTOMA.

Ranella leucostoma, Lam. Anim. sans Vert. ix. p. 542.

Triton leucostoma, Quoy et Gaim. Voy. de l'Astrolabe; Reeve, Conch. Icon. *Ranella*, pl. 1. f. 4.

This fine large *Ranella*, which has so much the appearance of a *Triton*, seems to be an aberrant form, partaking of the characters of both genera. It is pretty common amongst the crevices of the rocks at low water about Port Jackson, and the coast of New South Wales generally. It is also found in Tasmania, and, according to Dieffenbach, in New Zealand. It varies in colour from dark chocolate with banded varices to a pale reddish fawn-colour, and is covered with a short olive-green epidermis. Length $3\frac{1}{2}$ inches.

Fam. BUCCINIDÆ.

Subfam. NASSINÆ.

19. EBURNA (ZEMIRA) AUSTRALIS.

Eburna australis, Sow. Conch. Ill. f. 5 (not *Cancellaria spirata*, Lam.).

This very interesting shell, which belongs to the subgenus *Zemira* of H. and A. Adams, has been confounded by many authors with the *Cancellaria spirata* of Lam. They are, however, very distinct shells.

Z. australis appears never to have been found anywhere but in Port Jackson, where it is rare and an inhabitant of deep water. My specimens were dredged at a depth of 8 or 10 fathoms, inside the north Head. The outer lip has a small tooth near the fore part, and the columella is smooth and truncated at the base. Length 8 lines.

20. *COMINELLA ADELAIDENSIS.

Buccinum adelaidense, Crosse, Journ. de Conch. 1864, p. 276, pl. 11. f. 6.

This is the only species of *Cominella* I have met with in Port Jackson. It is of a whitish colour, transversely ridged, with the whorls coronately plicate below the sutures. Middle Harbour. Length 1 inch 2 lines.

21. *COMINELLA FILICEA.

Buccinum filiceum, Crosse et Fisch. Journ. de Conch. 1864, p. 346, pl. 3. f. 15, 16.

Under stones at low water. A pretty species, strongly longitudinally ribbed, tessellated and lined with brown. This species also occurs at Yorke's Peninsula, South Australia. Length 1 inch.

22. NASSA (ALECTRION) SUTURALIS, var.

Buccinum suturale, Lam.; Chem. pl. 125. f. 1199, 1200.

Dredged in Port Jackson, near the "Sow and Pigs." This thin, elongated variety, in which the sutural nodules are obsolete, may be distinguished by its smooth whorls, and linear painting flamed and articulated with brown. Length 1 inch 3 lines.

23. NASSA (ALECTRION) JACKSONIANA.

Buccinum jacksonianum, Kien. Mon. Bucc. pl. 19. f. 73.

Dredged in Middle Harbour. The whorls are frequently banded with brown and granulated at the upper part. Length 7 lines.

24. NASSA (NIOTHA) PAUPERATA.

Buccinum pauperatum, Lam. Anim. sans Vert. x. p. 183.

Of this species, so abundant in South Australia and Tasmania, a somewhat thin brownish variety occurs rarely in Port Jackson, in which the granulations upon the longitudinal plicæ are nearly obsolete. Length 7 lines.

25. NASSA (HIMA) RUFOCINCTA.

Nassa rufocincta, A. Ad. P. Z. S. 1851, p. 106.

A pretty species, with an elevated spire and rounded cancellated whorls, belonging to the same group as the British *N. incrassata*, Müll., and *N. compacta*, Ang., from St. Vincent's Gulf, South Australia. Length 7 lines.

26. NASSA (ARCULARIA) MANGELOÏDES.

Nassa mangeloïdes, Reeve, Conch. Icon. (*Nassa*).

Found on mud-flats at low water. The callus of the inner lip in this species extends over the front of the body-whorl. Length $\frac{1}{2}$ inch.

27. NASSA (ARCULARIA) LABECULA.

Nassa labecula, A. Ad. P. Z. S. 1851, p. 98.

A pretty little species, found on sandy mud at Middle Harbour at low tides; it is stained with yellow and rufous, banded below the sutures with livid purple, and has a blotch of the same colour on the columella-callus. Length 5 lines.

28. *NERITULA (CALLOMPHALA) LUCIDA.

Callomphala lucida, Ad. & Ang. P. Z. S. 1864, p. 35.

From Coodgee Bay, in shell-sand. A white, shining, semipellucid, depressed little shell, with the aperture entire in front, thus wanting the notch of the typical *Neritula*. Length 2 lines.

29. *CYLLENE LACTEA.

Cyllene lactea, Ad. & Ang. P. Z. S. 1863, p. 422.

A milk-white species covered with a thin epidermis, dredged in deep water at Port Stephen. Length 6 lines.

Subfam. PURPURINÆ.

30. PURPURA (POLYTROPA) SUCCINCTA.

Buccinum succinctum, Mart. Univ. Conch. ii. pl. 45.

Purpura rugosa, Lam.

A fine large species, of a yellowish-white colour, very prominently transversely ribbed throughout. Common on rocks at low water generally. Length $2\frac{1}{2}$ inches.

31. *PURPURA (STRAMONITA) NEGLECTA.

Purpura (Stramonita) neglecta, Angas, P. Z. S. 1867, p. 110.

A small ribbed species, with the interstices muricately scaled; purple within. Under stones outside Port Jackson Heads. Length 9 lines.

32. PURPURA (CRONIA) AMYGDALA.

Purpura amygdala, Kiener, Icon. Coq. Viv. pl. 10. f. 26.

Buccinum amygdala, Reeve, Conch. Icon. pl. 8. sp. 60.

The columella and aperture are of an orange cream-colour, and the whorls squamately sculptured and banded with brown filets. Although frequent at Moreton Bay, this species is rare in Port Jackson, a few examples only having been found. Length 10 lines. Specimens from the north measure $1\frac{1}{2}$ inch.

33. PENTADACTYLUS (SISTRUM) CHAIDEUS.

Purpura chaidea, Duclos, Ann. Scien. Nat. 1832.

P. nassoides, Quoy et Gaim.

A white globular species, somewhat resembling a *Nassa*, and inhabiting New Caledonia, of which I obtained three living specimens amongst the rocks at Nelson's Bay, near Port Jackson. Length 9 lines.

34. PENTADACTYLUS (SISTRUM) TUBERCULATUS.

Purpura tuberculata, De Blainv. Nouv. Ann. du Mus. pl. 9. f. 3.

P. marginalba, De Blainv.

P. granulata, Duclos.

Ricinula tuberculata, Reeve, Conch. Icon. pl. 2. f. 11.

A very common species in Port Jackson, and widely distributed throughout the entire Indo-Pacific province. Easily known by its

rows of large black tubercles on a greyish ground. Length 1 inch 2 lines.

35. *ADAMSIA TYPICA*.

Adamsia typica, Dunker, P. Z. S. 1856, p. 357.

Amongst rocks at low water in Port Jackson. Length 1 inch 4 lines.

This genus must be removed from the *Nassinae*, where it has been placed as a subgenus of *Cominella*, it having a purpuroid operculum. One other species is known (*A. adalaidae*) from South Australia.

Subfam. RAPANINÆ.

36. *RAPANA (LATIAXIS) NODOSA*.

Latiaxis nodosa, A. Ad. P. Z. S. 1853, p. 98.

An elegant species, squamately sculptured, and nearly white. The aperture sometimes buff, sometimes purple. Watson's Bay and Nelson's Bay. Length 10 lines.

Fam. DACTYLIDÆ.

37. **OLIVELLA PARDALIS*.

Olivella pardalis, Ad. & Ang. P. Z. S. 1863, p. 442, pl. 37. f. 3.

This elegant species was dredged at Watson's Bay, Port Jackson, in 5 fathoms. It may readily be distinguished by three rows of large brown spots encircling the whorls. Length 5 lines.

38. **OLIVELLA LEUCOZONA*.

Olivella leucozona, Ad. & Ang. P. Z. S. 1863, p. 422, pl. 37. f. 23.

Dredged in Port Jackson, in 6 fathoms.

This species must not be confounded with *O. leucozonias*, Gray, from Senegal: the latter is encircled with two narrow white zones; whilst the former has only one, and is moreover of a different style of painting. Length 7 lines.

39. **OLIVELLA NYMPHA*.

Olivella nympha, Ad. & Ang. P. Z. S. 1863, p. 422.

A delicate semiopaque white slender species, with the aperture effuse anteriorly. Dredged at Port Stephen and in Port Jackson, in 5 fathoms. Length 7 lines.

40. *AMALDA MARGINATA*.

Ancillaria marginata, Lam.; Sow. Species Conch. pt. 1. f. 40-43; Reeve, Conch. Icon. pl. 3. f. 8 a, b.

Several specimens of this fine shell were dredged in Port Jackson, near the Heads, and on the "Sow and Pigs" bank. In Tasmania it occurs of a larger size. The Port Jackson examples do not exceed 1 inch 3 lines in length, whilst those from Tasmania are 1 inch 10 lines.

41. *AMALDA OBLONGA*.

Ancillaria oblonga, Sow. Spec. Conch. p. 7. f. 38, 39; Reeve, Conch. Icon. pl. 8. f. 24 *a*, *b*.

A pretty species of a fawn-colour, banded at the sutures with an opaque cream-coloured callosity, which is striped with chestnut; there is also a band of chestnut markings near the lower portion of the last whorl. Dredged near Port Jackson Heads. Length 10 lines.

Fam. VOLUTIDÆ.

42. *VOLUTA (SCAPHA) MAGNIFICA*.

Voluta magnifica, Chemn. Conch. Cab. xi. p. 8; Reeve, Conch. Icon. *Voluta*, pl. 1. f. 2.

This noble Volute, almost the largest of the genus, seems to attain its maximum growth in Port Jackson. It is now a shell of rare occurrence, and is found half burying itself amongst weed and ooze on sandy and muddy flats beyond tide-mark. Rose Bay, Vaucluse Bay, and Middle Harbour are its favourite localities. It occurs in places along the coast, such as Woollongong, Botany Bay, and Brisbane Water—and extends northwards to Moreton Bay, where the specimens found are tuberculated. Length 12 inches.

43. **VOLUTA (AMORIA) ANGASI*.

Voluta angasi, Sowerby, Thes. Conch. *Voluta*, f. 99. sp. 73.

This species (which was formerly confounded with *V. undulata*, Lam.), although plentiful in Tasmania, is rare in Port Jackson. It ranges northwards as far as Richmond River, where its place is supplied by *V. zebra*, Leach. The true *V. undulata* of Lamarck is from Port Lincoln and the Great Australian Bight. Specimens have been found at Middle Harbour and at Cabbage-tree Cove, outside Manly Beach. Length 3 inches. The Tasmanian ones are rather larger, and of a deeper colour.

44. *AULICA MARMORATA*.

Voluta marmorata, Swainson, Exotic Conch. i. pl. 4.

A rare and elegant shell, of rather light inflated structure, with the whorls sharply tubercled at the upper part and attenuated towards the base. It is of a pale fulvous orange-colour, sparingly painted with wavy chestnut lines, descending from the sutures, with two bands formed by a blue clouded shading of the markings. Port tephen and Newcastle, New South Wales. Length $4\frac{1}{2}$ inches.

Fam. MITRIDÆ.

45. *MITRA NIGRA*.

Mitra nigra, Chemn. (not Quoy) Conch. x. p. 168.

M. melaniana, Lam.

M. carbonaria, Swains.; Reeve, Conch. Icon. *Mitra*, pl. 5. f. 33.

PROC. ZOOI. SOC.—1867, No. XIII.

This *Melania*-shaped, smooth, black species is not uncommon under stones at low water, in some parts of Port Jackson. It belongs to the same group as *M. glabra*, which represents it in South Australia and Tasmania. Length 2 inches 8 lines.

46. MITRA SOLIDA.

Mitra solida, Reeve, P. Z. S. 1844; Conch. Icon. *Mitra*, pl. 3. f. 18.

Of this very rare Mitre, which is of a fulvous-bay colour, irregularly flaked with white, a single specimen, habitat unknown, was described and figured by Reeve, from the collection of Mr. Norris. A second example, in a living state, was dredged by myself off Middle Head, Port Jackson, in 5 fathoms. It was also obtained in 6 fathoms in Port Jackson, by Mr. MacGillivray, during the voyage of H.M.S. 'Rattlesnake,' and erroneously referred to as *M. sordida* in Prof. Forbes's paper on the "Mollusca" in the Appendix to the account of that voyage. Length 1 inch 6 lines.

47. *MITRA (CANCILLA) STRANGEI.

Cancilla strangei, Angas, P. Z. S. 1867, p. 110.

A pretty little fusiform white shell, with the whorls ridged and cancellated. It somewhat resembles *Mitra isabella* in miniature. Dredged in Middle Harbour. It has also been found at Moreton Bay. Length 7 lines.

Subfam. COLUMBELLINÆ.

48. COLUMBELLA VERSICOLOR.

Columbella versicolor, Sow. P. Z. S. 1832, p. 119; Reeve, Conch. Icon. pl. 11. f. 51 *a*, *b*.

Under stones at low water in Port Jackson. It is also found in New Caledonia and Woodlark Island. Length $\frac{1}{2}$ inch.

49. COLUMBELLA (MITRELLA) SEMICONVEXA.

Buccinum semiconvexum, Lam. Anim. sans Vert. x. p. 171; Reeve, Conch. Icon. pl. 18. f. 95 *a*, *b*.

Common under stones about Watson's Bay. The Port Jackson specimens are smaller and more elongated than those from Tasmania (which are typical), and have not the same flesh-coloured tinge. This is a very variable species; and it is probable that the *C. rosacea* and *C. saccharata* of Reeve are only extreme pink varieties from Tasmania. An orange variety occurs at Lacépède Bay, in South Australia. Length 9 lines.

50. COLUMBELLA (MITRELLA) AUSTRALIS.

Columbella australis, Gaskoin, P. Z. S. 1851, p. 5; Reeve, Conch. Icon. pl. 15. f. 78 *a*, *b*, & 188.

Under stones at low tide, in company with *C. semiconvexa*, from

which it may be known by the contraction of the aperture below and the remarkable frill-like epidermis round the sutures. The apex is papillose in all the specimens I have met with. Length 9 lines.

51. COLUMBELLA (MITRELLA) LINCOLNENSIS.

Columbella lincolnsensis, Reeve, Conch. Icon. pl. 29. f. 184 a, b.

A pretty fusiform species, not unlike *C. corniculata*, Lam., from the Adriatic. Rare, under stones in Port Jackson. The type specimens, as the name imports, are from Port Lincoln in South Australia. Length 6 lines.

52. *COLUMBELLA (MITRELLA) ALBOMACULATA.

Columbella albomaculata, Angas, P. Z. S. 1867, p. 111.

A solid fusiform species, mottled with chestnut, and ornamented with clusters of white spots immediately below the sutures. Under stones in Port Jackson. Length 6 lines.

53. COLUMBELLA (MITRELLA) PULLA.

Columbella pulla, Gaskoin, P. Z. S. 1851, p. 6; Reeve, Conch. Icon. pl. 19. f. 106.

A dark-brown species without markings, found under stones in Port Jackson. (Strange, in Cum. Coll.) Length 7 lines.

54. COLUMBELLA (AMYCLA) DERMESTOÏDES.

Columbella dermestoides, Kiener.

C. tessellata, MS. Mus. Cuming; Sow. Thesaurus, pl. 39. f. 123.

This very beautifully tessellated little species is certainly conspecific with the *C. dermestoides* of Kiener, which species, however, is recorded as coming from the West Indies. I have one or two specimens from South Australia, where, as well as in Port Jackson, it is very rare. My specimens were dredged in 5 fathoms of water at Watson's Bay. Length 5 lines.

55. COLUMBELLA (ANACHIS) LENTIGINOSA.

Columbella lentiginosa, Hinds, Moll. Voy. Sulphur.

A very small longitudinally ribbed species, of an olive-brown colour, having a slight tendency to a pale band near the sutures. Under stones in Port Jackson, also Moreton Bay. Length 2 lines.

56. *ÆSOPUS FILOSUS.

Æsopus filusus, Angas, P. Z. S. 1867, p. 111.

An elegant fusiform shell, belonging to the genus *Æsopus* of Gould, with the columella arcuate and smooth, and the whorls closely transversely lirate. The colour is either brown or white. Dredged in Port Jackson. Length 6 lines.

Fam. MARGINELLIDÆ.

57. MARGINELLA (GLABELLA) MUSCARIA.

Marginella muscaria, Lam. Anim. sans Vert. x. p. 441; Reeve, Conch. Icon. pl. 8. f. 29 *a, b*.

This species inhabits deep water in Port Jackson. It may be distinguished by its coating of flesh-coloured enamel, as well as by being the largest species of the genus occurring in that locality. It is found likewise in Tasmania. Length $7\frac{1}{2}$ lines.

58. MARGINELLA ATTENUATA.

Marginella attenuata, Reeve.

A transparent, horny, attenuated species, dredged in Port Jackson. Length $4\frac{1}{2}$ lines.

59. MARGINELLA TRANSLUCIDA.

Marginella translucida, Sow. in Coll. Cuming.

A solid, white, shining species, with an elevated spire. Dredged at Port Stephen. Length 4 lines.

60. MARGINELLA TURBINATA.

Marginella turbinata, Sow. Thes. Conch. *Marginella*, p. 385, pl. 75. f. 70, 71.

Stouter than the preceding, with the spire shorter, and having in some specimens a crenulated plication round the upper part of the whorls. Dredged in Middle Harbour. Length 4 lines.

61. MARGINELLA SIMPLEX.

Marginella simplex, Reeve, Conch. Icon. pl. 22. f. 115.

Tinged with flesh-colour on the back; spire very short. Dredged in Port Jackson. Length $3\frac{1}{2}$ lines.

62. MARGINELLA (CRYPTOSPIRA) OVULUM.

Marginella ovulum, Sow. Thes. Conch. p. 401, pl. 78. f. 188.

White or flesh-colour. The last whorl is produced over the spire. Dredged in Port Jackson and Port Stephen. Length $4\frac{1}{2}$ lines.

Fam. CASSIDIDÆ.

63. CASSIS ACHATINA.

Cassis achatina, Lam. Anim. sans Vert. x. p. 33; Reeve, Conch. Icon. *Cassis*, pl. 10. f. 28 *a, b*.

This very beautifully variegated shell, though rare, is to be met with in several parts of Port Jackson, and also at Woollongong and Port Stephen. The Rev. Mr. Hannah collected some specimens at Algoa Bay, Cape of Good Hope—a remarkable circumstance, as the species is very local in Australia, being confined, as far as we are

aware, to a few spots on the south-east coast. It inhabits deep water. Length $2\frac{1}{2}$ inches.

64. *CASSIS PYRUM*.

Cassis pyrum, Lam. Anim. sans Vert. x. p. 33.

Cassis zeylanica, Lam.; Reeve, Conch. Icon. *Cassis*, pl. 11. f. 29 a, b, c.

This species (to which the *C. paucirugis* of Menke approximates so closely as to render it difficult to separate them) is an inhabitant of rather deep water, like most of the genus, and occurs sparingly in Port Jackson, Port Stephen, and Botany Bay. It is also to be found in Tasmania, and on the west coast of New Zealand, where the examples are beautifully painted with bands of brown wavy spots. Length $2\frac{1}{3}$ inches.

Fam. DOLIIDÆ.

65. *DOLIUM VARIEGATUM*.

Dolium variegatum, Lam. Anim. sans Vert. x. p. 133.

D. kieneri, Phil.; Reeve, Conch. Icon. *Dolium*, pl. 5. f. 7 a.

This fine large *Dolium* is the only species of this somewhat restricted genus which is to be found as far south as Botany Bay and Port Jackson. It is a thin, globose, inflated shell, having the transverse ribs more or less spotted with brown. In Botany Bay, upon the "Seven-mile beach," very large specimens, mostly broken, are washed ashore after easterly gales. Its habitat extends all round North Australia, and westward as far south as King George's Sound. Length 7 inches.

Fam. NATICIDÆ.

66. *NATICA MAROCHIENSIS*.

Natica marochiensis, Lam. Anim. sans Vert. viii. p. 642; Reeve, Conch. Icon. *Natica*, pl. 13. f. 52.

This species, which varies considerably in the pattern of its colouring, though nearly constant in form, seems to be of almost world-wide distribution. The Port Jackson specimens are from Middle Harbour. In the Sandwich Islands, New Caledonia, the Mauritius, and Madagascar, as well as along the north-east coast of Australia, it occurs pretty generally. North Africa and the West Indies are cited by old authors as its habitat. Length of the largest Port Jackson specimen 1 inch.

67. *NATICA (LUNATIA) PLUMBEA*.

Natica plumbea, Lam. Anim. sans Vert. viii. p. 632.

N. sordida, Swains.; Reeve, Conch. Icon. *Natica*, pl. 9. f. 34 a, b.

A fine species, of a turbinated form and dark leaden-grey colour, having the columella tinged with red. It occurs on the sands at Middle Harbour and in Botany and Broken Bays, at low water, burying itself just beneath the surface. Length $1\frac{3}{4}$ inch.

68. NATICA (LUNATIA) MELASTOMA.

Natica melastoma, Swainson, Zool. Illust. pl. 79; Reeve, Conch. Icon. *Natica*, pl. 18. f. 78.

A handsome species, less conical than *N. plumbea*, of a fulvous-ashy tint, with a coloured band below the suture, and having the umbilicus overspread by an orange-red callosity. It inhabits a similar locality to the preceding; and may be distinguished from *N. strangei* by its less conical form and filled up umbilicus. Length $1\frac{1}{2}$ inch.

69. NATICA (LUNATIA) STRANGEI.

Natica strangei, Reeve, Conch. Icon. pl. 18. f. 81.

Like *N. plumbea* in form, bluish-ashy colour, with a red border round the umbilical area, and a paler band of the same colour below the sutures. Rare in Port Jackson. It extends northwards to Cape York. Length 1 inch 2 lines.

70. NATICA (NEVERITA) CHEMNITZII.

Natica chemnitzii, Récluz, Mus. Cuming; Reeve, Conch. Icon. *Natica*, pl. 2. f. 7.

This large species is nearly allied to *N. lamarekiana*, but is more conical, and has the umbilicus more covered by a callosity, which is divided in the middle. It is found on the sandy mud at low water in Middle Harbour and at Botany Bay. Length 2 inches.

71. NATICA (NEVERITA) LAMAREKIANA.

Natica lamarekiana, Récluz, MS. Mus. Cuming; Reeve, Conch. Icon. *Natica*, pl. 2. f. 6.

A globular depressed species, with the umbilicus largely angularly excavated and half covered by a grooved recurved callosity. Rare in Port Jackson. Length of my specimen 1 inch.

72. *AMAUROPSIS MORCHI.

Amauropsis morchi, Adams & Angas, P. Z. S. 1863, p. 423.

A dark-brown horny-looking shell, in aspect something like a small *Vivipara*, with a very acute spire, and the whorls obtusely angled at the sutures. The operculum is thin, horny, and subspiral. Only two examples of this interesting species have been obtained; they were found adhering to the under surface of a large stone, at Watson's Bay, just inside Port Jackson Heads, during an unprecedently low tide. Length 5 lines.

73. NATICINA NITIDA.

Naticina nitida, Reeve, Conch. Icon.

Dredged near Spectacle Island. Several small specimens of this species were dredged at the above locality. It occurs also in South Australia. Length $\frac{1}{2}$ inch.

74. RUMA UMBILICATA.

Naticina umbilicata, Quoy, Voy. de l'Astrol. ii. p. 224, pl. 66. f. 22, 23.

A few small colourless examples of this species (which in Tasmania and South Australia is handsomely banded with brown) were dredged in Port Jackson. Length of Port Jackson specimens 6 lines; Tasmanian specimens 1 inch.

75. CATINUS ZONALIS.

Sigaretus zonalis, Quoy et Gaim. Voy. de l'Astrol. v. p. 2, pl. 66. f. 1-3.

This species, so common to the westward, is very rarely met with in Port Jackson. Length 10 lines.

Fam. LAMELLARIIDÆ.

76. LAMELLARIA INDICA.

Marsenia indica, Leach.

A thin, transparent, white species, somewhat resembling the British *L. perspicua*, Linn., only four times as large. The animal covers the shell. Found on Coodgee Beach, washed up amongst shell-sand. Length 11 lines.

This shell must not be confounded with *Coriocella nigra* of Quoy.

Fam. SCALIDÆ.

77. SCALA SCALARIS.

Turbo scalaris, Linn.

Scalaria pretiosa, Lam.; Sow. Thes. pl. 32. f. 17.

Of this fine shell (the well-known "Wentle-trap" of the China seas) two or three small-sized specimens have been obtained, washed ashore upon the beaches outside Port Jackson. Length of largest New South Wales specimen $\frac{1}{2}$ inch.

78. SCALA LINEOLATA.

Scalaria lineolata, Kien.; Sow. Thes. pl. 33. f. 45, 46, 48.

An elegant little species, short and stout, having one or more brown bands on the whorls. Dredged in deep water in Port Jackson. It occurs also in the Philippines and Japan. Length 5 lines.

79. SCALA PHILIPPINARUM.

Scalaria philippinarum, Sow. P. Z. S. 1844; Thes. Conch. pl. 32. f. 1-3.

An acuminate white species, with rather distant, thin, oblique varices. Dredged in Port Jackson; found also in Amboyna and the Philippines. Length 10 lines.

80. *Scala jukesiana*.

Scalaria jukesiana, Forbes, Appendix to Voy. of Rattlesnake, p. 383, t. 3. f. 7.

A lanceolately turreted graceful little shell, with numerous thread-like varices, bearing some resemblance to *S. clathratulus* of the seas of Europe. Dredged in Port Jackson. Length 5 lines.

81. *Scala (Opalia) australis*.

Scalaria australis, Lam. Anim. sans Vert.; Sow. Thes. Conch. pl. 35. f. 135.

Shell opaque white, many-whorled, and tapering to a sharp point; stoutly variced, those on the last whorl terminating in keel. Found under stones and in crevices of rocks at low tides outside Port Jackson Heads, at Manly Beach, Long Bay, and Wollongong. The animal emits a purple fluid. Length 1 inch 4 lines.

Another species of *Opalia* (*O. granulosa* of Quoy) is found in South Australia.

Fam. PYRAMIDELLIDÆ.

82. **Turbonilla nitida*.

Turbonilla nitida, Angas, P. Z. S. 1867, p. 112.

An elegant shining species, closely and strongly longitudinally ribbed. Dredged in Watson's Bay. Length 5 lines.

83. **Odostomia levis*.

Odostomia levis, Angas, P. Z. S. 1867, p. 112.

A rather thin milk-white shell, with a strong transverse fold on the columella. Dredged in Watson's Bay. Length $3\frac{1}{2}$ lines.

84. **Odostomia lactea*.

Odostomia lactea, Angas, P. Z. S. 1867, p. 112.

A slender white shining species, with the sutures channelled, and a very prominent slight oblique fold on the columella. Dredged at Watson's Bay. Length $2\frac{1}{2}$ lines.

85. **Odostomia (Parthenia) pascoei*.

Odostomia pascoei, Angas, P. Z. S. 1867, p. 112.

Whorls longitudinally plicate, with the last whorl ventricose and the outer lip arcuate. Dredged in Port Jackson. Length 4 lines.

86. **Odostomia (Parthenia) krefftii*.

Odostomia krefftii, Angas, P. Z. S. 1867, p. 112.

A smaller species than the preceding, with similar sculpture, the last whorl narrower, and the outer lip straight. Dredged in Port Jackson. Length 3 lines.

87. *STYLOPTYGMA AURANTIACA.

Styloptygma aurantiaca, Angas, P. Z. S. 1867, p. 112.

A narrow acuminate rather thin shell, of a pale orange-colour, with the whorls finely transversely striated and the columella fold scarcely developed. Length $2\frac{1}{2}$ lines.

88. CINGULINA CIRCINATA.

Cingulina circinata, A. Ad. Ann. & Mag. Nat. Hist. Dec. 1860.

Acuminately pyramidal, with the whorls transversely grooved. Dredged in Port Jackson. Length $3\frac{1}{2}$ lines.

Fam. EULIMIDÆ.

89. *EULIMA PROXIMA.

Eulima proxima, Sow. Conch. Icon. pl. 6. f. 48.

Dredged in Port Jackson. Length 8 lines.

90. EULIMA ACICULA.

Stylifer acicula, Gould, Exped. Shells.

A small shining vitreous shell, of which a few specimens were found in Port Jackson in deep water. Length 4 lines. In Fiji it is found parasitic on the bêche-de-mer.

91. *MUCRONALIA MUCRONATA.

Eulima mucronata, Sow. Conch. Icon. pl. 6. f. 42.

A remarkable little shell, white and shining, having something of the aspect of a *Eulima*, with the spire terminating in a nipple. Described by Mr. Sowerby from the type specimen in my collection, which is unique. Dredged in Port Jackson. Length 5 lines.

92. *LEIOSTRACA ACUTISSIMA.

Leiostraca acutissima, Sow. Conch. Icon. pl. 2. f. 10 a, b.

A very slender, white, semitransparent species, dredged in Port Jackson; also unique in my cabinet. Length 4 lines.

Fam. ARCHITECTONICIDÆ.

93. ARCHITECTONICA REEVEI.

Solarium reevei, Hanley; Sow. Thes. Conch. *Solarium*, sp. 16, pl. 1. f. 9, 10.

Deep water, in Port Jackson, very rare. A small conoid species, of a pale livid colour, spotted with brown at the sutures. Height 6 lines, breadth 1 inch.

94. PHILIPPICA LUTEA.

Solarium luteum, Lam.; Sow. Thes. Conch. *Solarium*, sp. 25, pl. 4. f. 52-54.

Deep water, Port Jackson. This species appears identical with *S. luteum*, Lam., from the Mediterranean. The only difference is that the spots on the sutural ridges are darker in the Australian specimens. Height $3\frac{1}{2}$ lines, breadth 6 lines.

Suborder TOXIFERA.

Fam. TEREBRIDÆ.

95. *ACUS (ABRETIA) BICOLOR.

Acus bicolor, Angas, P. Z. S. 1867, p. 111.

A whitish species, with the whorls more or less longitudinally ribbed, and the lower portion of the last whorl stained with violet chestnut. Dredged in Port Jackson. Length $7\frac{1}{2}$ lines.

96. *ACUS (ABRETIA) ASSIMILIS.

Acus assimilis, Angas, P. Z. S. 1867, p. 111.

In this species the whorls are more rounded, strongly ribbed, and shaded with brown towards the sutures. The last whorl has a white band, and is stained with dark brown below. Dredged in Port Jackson. Length 6 lines.

97. *ACUS (EURYTA) TRILINEATA.

Euryta trilineata, A. Adams & Angas, P. Z. S. 1863, p. 418, pl. 37. f. 13.

An elegant fusiform shell, with the whorls longitudinally plicate and encircled with two or three brown thread-like lines. Dredged in deep water, near Port Jackson Heads. Length 7 lines.

Fam. TURRITIDÆ.

Subfam. TURRITINÆ.

98. *BELA MITRALIS.

Bela mitralis, Ad. & Ang. P. Z. S. 1863, p. 420.

A pale yellow elongated species, ornamented with a band of red spots at the suture of the last whorl. Dredged in Port Jackson. Length 8 lines.

99. DRILLIA (CRASSISPIRA) OWENI.

Pleurotoma oweni, Gray, MSS.; Reeve, Conch. Icon. pl. 9. sp. 70.

An elegant species, of a pale ash-colour, with the whorls plicately nodulated at the upper part and the lower whorl beautifully nodulously cancellated. Dredged in Port Jackson in deep water. Length 1 inch 3 lines.

100. DRILLIA RADULA.

Pleurotoma radula, Hinds, Moll. Voy. Sulphur, pl. 5. f. 9.

Deep water, Port Jackson. Length 1 inch.

101. *DRILLIA VEXILLUM*.

Pleurotoma vexillum, Reeve, P. Z. S. 1845, p. 115 ; Conch. Icon. pl. 29. f. 264.

A fine species, with the whorls nodulously plicate, broadly banded with white on a chocolate ground. Middle Harbour, Port Jackson. Length 1 inch 2 lines.

102. **DRILLIA METCALFEI*.

Drillia metcalfei, Angas, P. Z. S. 1867, p. 113.

Deep water. Length $7\frac{1}{2}$ lines.

103. **DRILLIA COXI*.

Drillia coxi, Angas, P. Z. S. 1867, p. 113.

An elegant pale fulvous species, with the whorls nodulous and encircled with fine striæ. Dredged in Port Jackson. Length 9 lines.

104. **DRILLIA BERAUDIANA*.

Pleurotoma beraudiana, Crosse, Journ. de Conch. 1863, p. 88, pl. 1. f. 6.

In this species the whorls are strongly nodulous. Dredged in Port Jackson in deep water. Length $7\frac{1}{2}$ lines.

105. **DRILLIA ANGASI*.

Pleurotoma angasi, Crosse, Journ. de Conch. 1863, p. 87, pl. 1. f. 5.

Rather smaller and more slender than the preceding species, with the whorls stoutly plicate. Dredged in Port Jackson. Length 6 lines.

Subfam. CLATHURELLINÆ.

106. **CLATHURELLA RETICOSA*.

Clathurella reticosa, Ad. & Ang. P. Z. S. 1863, p. 420.

A pretty cancellated species. Dredged in Middle Harbour. Length 6 lines.

107. **CLATHURELLA ZONULATA*.

Clathurella zonulata, Angas, P. Z. S. 1867, p. 113.

Brownish, banded with ashy grey. Dredged in Port Jackson. Length 4 lines.

108. *DAPHNELLA CREBRIPPLICATA*.

Pleurotoma crebriplicata, Reeve, Conch. Icon. pl. 34. f. 313.

An elegant fusiform shell, with the whorls finely reticulately cancellated. Dredged in Port Jackson. Length 8 lines.

109. *DAPHNELLA LYMNÆFORMIS*.

P. lymnæformis, Kiener ; Reeve, Conch. Icon. pl. 35. f. 325.

Smaller than the preceding; painted with brown lines. Dredged in Middle Harbour. Length 6 lines.

110. **CITHARA COMPTA*.

Cithara compta, Ad. & Ang. P. Z. S. 1863, p. 419, pl. 37. f. 5.

Dredged in Port Jackson. Found also in South Australia. Length 6 lines.

111. **MANGELIA PICTA*.

Mangelia picta, Ad. & Ang. P. Z. S. 1863, p. 419, pl. 37. f. 7.

Prettily banded with purple and white, on a fulvous ground. Dredged in Port Jackson. Length 6 lines.

112. **MANGELIA LETOURNEUXIANA*.

Pleurotoma letourneuxiana, Crosse, Journ. de Conch. 1865, p. 425, pl. 11. f. 7.

An elegant fusiform species, longitudinally plicately ribbed and transversely striated. Dredged in Middle Harbour. Length 6 lines.

Fam. CONIDÆ.

113. *CONUS MACULOSUS*.

Conus maculosus, Sow.

C. maculatus, Sow. Thes. *Conus*, pl. 13. f. 296.

In the 'Conchologia Iconica' Mr. Reeve figures this species as "var. *b*" of *C. anemone*, Lam. (see pl. 25. f. 139 *a*). It is, however, a very distinct species, as a comparison of a number of specimens in various stages of growth tends to prove. *C. maculosus* is a nearly smooth, thin, peculiarly inflated shell, richly mottled with purplish brown, and attains a larger size than *C. anemone*, which is of a true conical form, more solid, finely transversely striated, with an elevated spire, and splashed with rose-brown or orange. *C. anemone*, moreover, is an inhabitant of South Australia, and never occurs in Port Jackson, where *C. maculosus* is to be found under rocks and large stones, at low spring tides, in many situations. At Watson's Bay I have taken as many as ten living specimens from beneath one stone. This species is found in the Philippine Islands, on the authority of the late Mr. Cuming. Length of the largest Port Jackson specimen $2\frac{1}{2}$ inches.

114. *CONUS JUKESEI*.

Conus jukesii, Reeve; Sow. Thes. *Conus*, pl. 13. f. 297.

A very angular species, peculiarly mottled with bluish grey and olive, first met with by Mr. Jukes during the voyage of H.M.S. 'Fly' on the north coast of Australia. I have obtained several fine living specimens (one of which was perfectly white) in Port Jackson, in company with *C. maculosus*. Its maximum size is 1 inch 4 lines.

115. *CONUS GRAYI*.

Conus grayi, Reeve, P. Z. S. 1843, p. 179; Conch. Icon. pl. 46. f. 258.

A somewhat elongated shell, smooth above, ridged below, and handsomely painted with two rows of large waved blackish spots. This species is of very rare occurrence. Under rocks at Middle Harbour at low spring tide. Length 11 lines.

Suborder ROSTRIFERA.

Fam. CYPRÆIDÆ.

116. *CYPROVULA UMBILICATA*.

Cypræa umbilicata, Sow. in Tank. Cat. 2260.

Cyprovula umbilicata, Gray, P. Z. S. 1849, p. 125.

Several living specimens of this rare shell were dredged in deep water, at a distance of two miles off the coast of New South Wales, a little to the southwards of Wollongong, by Commodore Loring, C.B., when commanding H.M.S. 'Iris.' They are somewhat smaller and paler in colour than the ordinary Tasmanian examples. Length of the New South Wales specimens 3 inches.

117. *CYPRÆA VITELLUS*.

Cypræa vitellus, Linn.; Lister, Conch. pl. 693. f. 40.

This species, so abundant throughout the Indo-Pacific molluscan province, is rarely met with in Port Jackson. The few that have been obtained alive in Woolloomooloo Bay and at Coorunulla beach are rich in colour and moderately large. Length of largest Coorunulla specimen 2 inches 3 lines.

118. *CYPRÆA CAPUT-SERPENTIS*.

Cypræa caput-serpentis, Linn.; Lister, Conch. pls. 701, 702. f. 49, 50.

Like *C. vitellus*, this species, although one of the most abundant within the tropics, is rare in Port Jackson, only three or four specimens having been found at Manly Beach and Long Bay, which may be considered its furthest southern limit. The young shells are ash-coloured, with a dark central band. Length $1\frac{1}{2}$ inch.

119. *CYPRÆA ASELLUS*.

Cypræa asellus, Linn.; Encyc. Méth. pl. 356. f. 5.

Several specimens of this species were dredged in Port Jackson Harbour by the late Fred. Strange. I obtained three examples myself at Long Bay, between Port Jackson and Botany Heads. They are larger and the bands more deeply coloured than those from Ceylon. Length 9 lines.

120. *CYPRÆA CLANDESTINA*.

Cypræa clandestina, Linn.; Wood, Ind. Tes. pl. 3. f. 17.

C. moniharis, Lam.

Outer Manly Beach and Watson's Bay have produced a few specimens of this delicately zigzag-lined species. It is found in crevices of rocks at very low spring tides. At Moreton Bay it is more abundant, being found in company with *C. annulus*, *C. erosa*, *C. caput-serpentis*, and others, in those clusters of oysters called 'ningi-ningi' by the blacks, which are exposed at low tides on the shores of Stradbroke Island. Length 8 lines.

121. CYPRÆA CARNEOLA.

Cypræa carneola, Linn. ; Lister, Conch. pl. 664. f. 8.

This species, abundant further to the north, is sometimes met with at Long Bay, between Botany and Port Jackson Heads. Length $1\frac{1}{2}$ inch.

122. CYPRÆA XANTHODON.

Cypræa xanthodon, Gray ; Sow. Conch. Illus. f. 18.

A very rare species in Port Jackson, of which I found two living examples at Watson's Bay. Length 14 lines.

123. CYPRÆA ERRONES.

Cypræa erronea, Linn. ; Wood, Index Test. pl. 17. f. 39.

Young specimens of this species, so common within the tropics, are found, though rarely, at outer Manly Beach. Length 1 inch.

124. CYPRÆA FELINA.

Cypræa felina, Gmel., Wood, Index Test. pl. 17. f. 26.

A single example of this common Indian *Cypræa* was found by me at Middle Harbour. Length 9 lines.

125. CYPRÆA PIPERATA.

Cypræa piperata, Gray ; Sow. Conch. Ill. f. 24.

Rare in Port Jackson. In South Australia this species is abundant. The New South Wales specimens yet obtained are all young, and are spotted in bands somewhat like *C. bicolor* of Gaskoin, which may be only a variety of this species.

126. CYPRÆA MACULA.

Cypræa macula, A. Ad.

Of a greyish colour, freckled with chestnut, with dark spots round the basal margin. It is conspicuously characterized by a large chestnut blotch on the back of the shell. Rare in Port Jackson. Found also in Moreton Bay, and Japan (A. Adams). Length 10 lines. A good species, unlike any other, and *certainly not* a variety of *C. fimbriata*.

127. TRIVIA AUSTRALIS.

Cypræa australis, Lam. ; Sow. Conch. Illus. f. 29.

Trivia australis, Gray.

This pretty species of *Trivia* may readily be distinguished by the liver-coloured blotches on the back of the shell. It is found amongst the rocks and under stones at low spring tides. Length 6 lines.

Fam. AMPHIPERASIDÆ.

128. AMPHIPERAS HORDACEA.

Ovulum hordaceum, Lam. Anim. sans Vert. x. p. 471; Reeve, Conch. Icon. pl. 8. f. 37.

A beautiful little elongated species, of a bright orange-colour, transversely striated, with the outer lip dentately serrated. A single specimen only was found, attached to the same branch of *Gorgonia* from which the following species was procured. On comparing it with examples of *A. hordacea* from Borneo it appears more shouldered and compact, with the sculpture stronger and the aperture narrower and more compressed. Until an opportunity offers of examining more specimens, I should hesitate to separate it from *A. hordacea*. Length $3\frac{1}{2}$ lines. Bornean specimens $5\frac{1}{2}$ lines.

129. *VOLVA ANGASI.

Ovulum angasi, A. Adams, MS. in Mus. Cuming; Reeve, Conch. Icon. pl. 10. f. 43 a, b.

Of this fine species, which somewhat resembles *Ovulum subreflexum*, Sow., I obtained two live specimens on a branch of red *Gorgonia* amongst the rocks at Watson's Bay, during an unprecedentedly low spring tide. No other specimens have been found. Length 1 inch 3 lines.

Fam. STROMBIDÆ.

130. STROMBUS (CANARIUM) LUHUANUS.

Strombus luhuanus, Linn. Syst. Nat. (12th edit.) p. 1209; Reeve, Conch. Icon. *Strombus*, pl. 9. f. 19.

This species occurs at the "Bottle and Glass" rocks, Vacluse Bay, on the southern side of Port Jackson, to which spot it appears to be exclusively confined. Following the coast northwards it again makes its appearance in great numbers at Moreton Bay, and is widely extended thence over the whole of the Indo-Pacific molluscan province. The Port Jackson specimens are smaller and lighter in colour than those from the tropics. Length 2 inches 6 lines.

131. STROMBUS (CANARIUM) FLORIDUS.

Strombus floridus, Lam. Anim. sans Vert. ix. p. 707.

S. mutabilis, Swainson.

This little *Strombus*, so variable in form and markings, is found in company with *S. luhuanus*, at the same locality in Port Jackson. It is not at all common there, and displays the same paleness of colour. It is one of the most abundant species of the tropics, and ranges from East Africa to Tahiti. Length 1 inch 2 lines.

Fam. APORRHAIIDÆ.

132. PELICARIA SCUTULATA.

Buccinum scutulatum, Martyn, Univ. Conch. t. 55.

Struthiolaria oblita, Sow.

The remarkable genus *Struthiolaria* has its headquarters in New Zealand. Of the allied genus *Pellicaria* of Gray, *P. scutulata* (the only species yet described) is found on the Australian coast. It lives on the sand in moderately deep water, and has been dredged at Watson's Bay, inside Port Jackson Heads, and at Middle Harbour. On the beach at Port Aiken fine adult specimens are occasionally washed ashore after a south-east gale. Length 2 inches.

Fam. CANCELLARIIDÆ.

133. CANCELLARIA GRANOSA.

Cancellaria granosa, Sow. Conch. Illus. *Cancellaria*, no. 15. f. 16, 17.

This fine species is nearly allied to *C. undulata*, Sow., from Port Elliott, South Australia. It is found in deep water, in Middle Harbour, Port Jackson. Dead specimens are occasionally washed ashore at Edwards's Bay, but it is rarely met with in good condition. The *C. australis*, Sow., and *C. lævigata*, Sow. (described from shells in the late G. Humphrey's collection that were *stated* to have come from New South Wales), I have never met with. Length 1 inch 7 lines.

Fam. CERITHIIDÆ.

134. BITTIUM GRANARIUM.

Cerithium granarium, Kiener, Icon. Coq. Viv. p. 72, pl. 19. f. 3.
Bittium lacertinum, Gould.

Common under stones at low water in Port Jackson. Length 8 lines.

135. LAMPANIA AUSTRALIS.

Cerithium australe, Quoy, Voy. de l'Astrolabe, pl. 55. f. 7.

Abundant in Port Jackson, on mud, and amongst rocks at low water. Length $1\frac{1}{2}$ inch.

136. POTAMIDES EBENINUM.

Cerithium ebeninum, Brug. Dict. no. 26.

Strombus aculeatus, Gmel.

This fine species occurs in great numbers on the mud-flats in Woomooloo Bay, and other similar localities in Port Jackson, Botany Bay, and Brisbane Water. Length 4 inches.

Fam. CERITHIOPSIDÆ.

137. TRIPHORIS NIGROFUSCUS.

Triphoris nigro-fuscus, A. Ad. P. Z. S. 1851, p. 278.

Under stones at low water, Port Jackson. Length 4 lines.

138. *TRIPHORIS LABIATUS*.

Triphoris labiatus, A. Ad. P. Z. S. 1851, p. 279.

Under stones, low water, Port Jackson. Length 3 lines.

Fam. LITTORINIDÆ.

139. *LITTORINA MAURITIANA*.

Phasianella mauritiana, Lam. Anim. sans Vert. ix. p. 244.

Littorina unifasciata, Gray.

? *L. levis*, Phil.

Very abundant on rocks between tide-marks, and creeping up far above high-water mark, all along the coast of New South Wales. This species extends from New South Wales to Swan River. Length 10 lines.

140. *TECTARIUS PYRAMIDALIS*.

Littorina pyramidalis, Quoy, Voy. de l'Astr. pl. 33. f. 12-15.

Equally common, and occurring in similar places, with *L. mauritiana*.

141. *RISELLA LUTEA*.

Trochus luteus, Quoy et Gaim. Voy. de l'Astr. p. 271, pl. 62. f. 8-11.

T. cicatosus, Jonas, 1843, in Phil. Abbild. *Trochus*, pl. 2. f. 2.

This species, the most conical of the genus, is common on the rocks outside Port Jackson, and along the coast to Kiama and Jervis Bay. Length 10 lines.

142. *RISELLA PLANA*.

Trochus planus, Quoy et Gaim. Voy. de l'Astr. p. 274, pl. 62. f. 13, 14.

Very abundant on rocks between tide-marks. Found also in South Australia. A depressed species, 5 lines in height, with the diameter of the base 1 inch.

143. *RISELLA NANA*.

Trochus nanus, Lam. Anim. sans Vert. Gen. *Trochus*, no. 67.

Littorina australis, Gray, Beechey's Voy. Zool. p. 141.

This species, which may be distinguished by the black bands in the interior of the aperture, is found occasionally in Port Jackson, in company with *R. plana*. In Tasmania it is abundant. Height 5 lines, diameter of base 7 lines.

144. **FOSSARINA PATULA*.

Fossarina patula, Adams & Angas, P. Z. S. 1863, p. 424, pl. 37. f. 9, 10.

Two specimens only of this interesting form were obtained, during PROC. ZOOL. SOC.—1867, No. XIV.

an unusually low tide, adhering to the under surface of a stone at Watson's Bay. Length 3 lines.

Fam. PLANAXIDÆ.

145. *PLANAXIS* (NINEA) MOLLIS.

Planaxis mollis, Sow. Genera, ii. *Planaxis*, f. 2.

A smooth white shell, covered with a brownish-yellow epidermis. Not uncommon amongst the rocks at low water at Coodgee Bay, and along the coast to Wollongong. Length 9 lines.

146. **ALABA PHASIANELLA*.

Alaba phasianella, Angas, P. Z. S. 1867, p. 113.

A beautiful semitransparent little species, somewhat resembling *A. pulchra* of A. Ad., but much more elongated, with the whorls flamed at the sutures, and irregularly dotted and line-painted with brown. Found amongst sea-weed in Port Jackson. Length 3 lines.

Fam. RISSOIDÆ.

147. **RISSOINA VARIEGATA*.

Rissoina variegata, Angas, P. Z. S. 1867, p. 113.

This species is white, either banded with livid purple or ornamented with zigzag chestnut markings. Port Jackson, deep water. Length 4 lines.

148. **RISSOINA TURRICULA*.

Rissoina turricula, Angas, P. Z. S. 1867, p. 114.

Strongly plicate, with the whorls angulate at the sutures and the last whorl ribbed at the base. Port Jackson, deep water. Length $2\frac{1}{2}$ lines.

149. **RISSOINA CINCTA*.

Rissoina cincta, Angas, P. Z. S. 1867, p. 114.

A pretty little elongate species, narrowly zoned with brown. Port Jackson, deep water. Length $2\frac{1}{4}$ lines.

150. **RISSOINA SMITHI*.

Rissoina smithi, Angas, P. Z. S. 1867, p. 114.

Strongly plicate, with the plicæ curved and banded with pale brown below the sutures. Port Jackson, deep water. Length 3 lines.

Fam. TURRITELLIDÆ.

151. *TURRITELLA* (HAUSTATOR) SINUATA.

Turritella sinuata, Reeve, Conch. Icon. pl. 11. f. 62.

A pretty little species, distinguished by its dotted painting and the deep sinus of the outer lip. Dredged in Middle Harbour and Watson's Bay. Length $8\frac{1}{2}$ lines.

Fam. VERMETIDÆ.

152. THYLACODES DECUSSATUS.

V. decussatus, Gmel.

A grotesquely twisted tubular shell, longitudinally squamately ridged, adhering by the under surface of the spire to blocks of sand-stone and rocks at low water. Length 2 or 3 inches, diameter of tube 6 lines.

153. BIVONIA QUOYI.

Bivonia quoyi, A. Ad.

Spirally tubular, smooth, agglomerate, and not attached to stones. Dredged in Port Jackson. Length 2 inches, diameter of tube 3 lines.

Fam. CALYPTRIDÆ.

154. TROCHITA (HALIOTIDEA) CALYPTRÆFORMIS.

Trochus calypttræformis, Lam. Anim. sans Vert. vii. p. 627.*Calypttræa lamarcki*, Desh.*Crepidula tomentosa*, Quoy et Gaim.

Attached to stones at low water in Port Jackson. Breadth 9 lines.

155. GALERUS PELLUCIDUS.

Trochita pellucida, Reeve, Conch. Icon. pl. 1. f. 2.

A small, white, semitransparent species, not unlike the European *G. chinensis*, or "Chinaman's hat." Adhering to dead shells in deep water in Port Jackson. Breadth 4 lines.

156. CRYPTA (CREPIATELLA) ACULEATA.

Crypta aculeata, Lam. Anim. sans Vert. vii. p. 642.*Patella aculeata*, Gmel.

Covered on the outside with rows of prickly scales, dark inside. Found attached to rocks at low water in Port Jackson. Length 1 inch.

157. CRYPTA (IANACHUS) UNGUIFORMIS.

Crepidula unguiformis, Lam.; Brod. Trans. Zool. Soc. i. p. 204, pl. xxix. f. 4.

Adhering to dead shells. Whitish, smooth, flat, and very variable in form. This species is almost worldwide. Length 1 inch 3 lines.

Fam. CAPULIDÆ.

158. COCHIOLEPAS ANTIQUATA.

Patella antiquata, Linn.*Pileopsis mitrula*, Lam.

? *Hipponyx foliacea*, Quoy, Voy. de l'Astrol. pl. 72. f. 41-45.

Shell flatly conical, with a foliaceous epidermis. Under rocks and stones in Port Jackson. Breadth 7 lines.

159. COCHLOLEPAS SUBRUFa.

Hipponyx subrufa, Sow. P. Z. S. 1835, p. 5.Elevately and obliquely conical, transversely crenulately ridged, tinged with rufous. Height $\frac{1}{2}$ inch.

160. *CAPULUS VIOLACEUS.

Capulus violaceus, Angas, P. Z. S. 1857, p. 114.

Shell compressed laterally, and violet within. Long Bay, outside Port Jackson Heads.

Fam. VANIKORIDÆ.

161. VANIKORO DESHAYESIANA.

Vanikoro deshayesiana, Récluz.A fine species, allied to *V. plicata*, but without the longitudinal plaits of that species. Watson's Bay, very rare. Length $7\frac{1}{2}$ lines.

162. VANIKORO GRANULATA.

Vanikoro granulata, Récluz.

The alternate ridges in this species are nodosely granulated. Port Jackson, under stones at low tide: very rare. Length 5 lines.

163. VANIKORO QUOYANA.

Vanikoro quoyana, A. Ad. P. Z. S. 1853, p. 175.Scarcely umbilicated, with the whorls nodulous and deeply cancellated. Under stones, Watson's Bay, very rare. Length $4\frac{1}{2}$ lines.

164. *VANIKORO RECLUZIANA.

Vanikoro recluziana, Ad. & Ang. P. Z. S. 1863, p. 424.

Under stones, low water, Camp Cove, very rare. The whorls are finely lirate, with the margin of the umbilicus strongly angulate. Length 5 lines.

Order SCUTIBRANCHIATA.

Fam. NERITIDÆ.

165. NERITA (THELIOSTYLA) ATRATA.

Nerita atrata, Chemn. Conch. v. pl. 190. f. 1954, 1955.*N. punctulata*, Quoy et Gaim.

Very common on rocks between tide-marks. This jet-black species, with the columella and interior white, is generally distributed throughout extra-tropical Australia, Tasmania, and New Zealand. Length 1 inch.

Fam. TROCHIDÆ.

Subfam. EUTROPIINÆ.

166. EUTROPIA VENTRICOSA.

Phasianella ventricosa, Quoy et Gaim. Voy. de l'Astr. pl. 59. f. 8, 9.

Articulated throughout with brown on a flesh-coloured ground, and clouded with olive more or less below the sutures. This species is found on the beach occasionally at Middle Harbour and about Wollongong. Length 1 inch.

167. *EUTROPIA SANGUINEA*.

Phasianella sanguinea, Reeve, Conch. Icon. pl. 3. f. 3.

The examples of this shell found in Port Jackson are much smaller than those from South Australia and Swan River. On examination of a number of specimens, this species seems to pass into the preceding one. Length 1 inch.

168. *EUTROPIA (TRICOLIA) KOCHII*.

Phasianella kochii, Phil., Krauss, Moll. Südaf. p. 104, pl. 6. f. 4.

This richly coloured little species is from deep water in Port Jackson. It is also met with in South Africa and the Falkland Islands. Length 6 lines.

169. **EUTROPIA (TRICOLIA) ROSEA*.

Eutropia (Tricolia) rosea, Angas, P. Z. S. 1867, p. 114.

A very minute species, somewhat elongated, of a uniform roseate colour. From shell-sand, Coodgee Bay. Length $1\frac{1}{2}$ line.

170. **EUTROPIA (TRICOLIA) VIRGO*.

Eutropia (Tricolia) virgo, Angas, P. Z. S. 1867, p. 115.

Equally minute with *E. rosea*, having the whorls ventricose, flamed with white at the sutures, and finely painted with pink undulating lines. From shell-sand at Coodgee Bay. Length $1\frac{1}{2}$ line.

Subfam. TURBININÆ.

171. *LUNELLA UNDULATA*.

Turbo undulatus, Chemn. Conch. Cab. x. pl. 169. f. 1640, 1641.

Amongst rocks about Port Jackson Heads, Broken Bay, Wollongong, &c. This species ranges all along the southern coasts of Australia and Tasmania. Height 1 inch 6 lines.

172. *NINELLA STRAMINEA*.

Helix stramineus, Martyn, Univ. Conch. t. 71.

Turbo torquatus, Gmel. Syst. Nat. 3597.

T. lamellosus, Brod. Zool. Journ. v. p. 331.

This large species is common amongst the rocks at low water about Port Jackson Heads. It is also abundant on many parts of the coast of New South Wales, the animal being used as an article of food by the aborigines. The operculum of *Ninella* is remarkable for having two marginal raised spiral ribs externally. Height 2 inches.

Subfam. ASTRALIINÆ.

173. UVANILLA TENTORIIFORMIS.

Trochus tentoriiformis, Jonas, Zeitschr. für Mal. 1845, p. 66.

T. urvillei, Philippi, Küster, Conch. Cab. p. 215, pl. 32. f. 4.

An interesting conical species, with a concave, beautifully imbricately sculptured base. The operculum is tinged with blue and pink, and makes a pretty shirt-stud when set in gold. The adult shells are very conical, and the young much flattened, in which state they are the *T. urvillei* of Philippi. Found amongst the rocks at low water in various parts of Port Jackson. Height $1\frac{1}{2}$ inch.

Subfam. LIOTIINÆ.

174. *LIOTIA ANGASI.

Liotia angasi, Crosse, Journ. de Conch. 1864, p. 343, pl. 13. f. 4.

This nodulously cancellated little species was dredged in Port Jackson. It also occurs in St. Vincent's Gulf, South Australia. Height 1 line.

175. *ADEORBIS ANGASI.

Adeorbis angasi, A. Ad. P. Z. S. 1863, p. 424, pl. 37. f. 11, 12.

This, one of the largest species of the genus, is unique in my cabinet. It was found at high-water mark in Coodgee Bay, outside Port Jackson Heads. Long. 3 lines, lat. $2\frac{1}{2}$ lines.

Subfam. TROCHINÆ.

176. CLANCULUS MAUGERI.

Trochus maugeri, Gray in Wood, Ind. Test. Sup. pl. 5. f. 27.

This fine large *Clanculus* is more conical than most species of this genus, and is of a peculiar livid greyish-pink colour. It is found at Cabbage-Tree Cove, Outer Manly, and outside the North Head of Port Jackson. Height 1 inch.

177. CLANCULUS CLANGULOÏDES.

Trochus clanguloïdes, Gray in Wood, Ind. Test. Sup. pl. 6. f. 39.

Frequent under stones at low water at Watson's Bay. This pretty species may be distinguished from the two following by its green colour, painted with maroon flames, by the rose-pink spots upon the base, and by its more conical spire. Height 6 lines.

178. CLANCULUS OMALOMPHALUS.

Clanculus omalomphalus, A. Ad. P. Z. S. 1851, p. 162.

Under stones at low water, in company with *C. clanguloïdes*. It may be known by having the lower whorl sharply keeled. White or pale rose, with alternate blotches of brown or dark rose-colour. Height 5 lines.

179. CLANCULUS GIBBOSUS.

Clanculus gibbosus, A. Ad. P. Z. S. 1851, p. 162.

Under stones in Port Jackson; less abundant than either of the two former species. In this species the whorls are rounded, not keeled, and the spire is more depressed. Height 4 lines. It is also found in South Australia.

180. EUCHELUS BACCATUS.

Monodonta baccata, Menke, Moll. Nov. Holl. p. 14. no. 51.

Adhering to the under surface of stones at low water near Port Jackson Heads. It occurs also in South Australia. Length $\frac{1}{2}$ inch.

181. *EUCHELUS SCABRIUSCULUS.

Euchelus scabriusculus, A. Ad. & Ang. MS. in Coll. Cum.

A very small species, differing from *E. baccatus* in its cancellated sculpture and being umbilicated. Under stones in Port Jackson. Length 2 lines.

182. THALOTIA ZEBRIDES.

Thalotia zebrides, A. Ad. P. Z. S. 1851, p. 173.

Common amongst the rocks in various parts of Port Jackson. The whorls are granulately ridged, and painted with dusky flames below the sutures. Length 11 lines.

183. EUTROCHUS SCITULUS.

Ziziphinus scitulus, A. Ad. P. Z. S. 1854, p. 38; Reeve, Conch. Icon. *Ziziphinus*, pl. 6. f. 44.

This shell differs from a true *Ziziphinus* in being deeply umbilicated. It is found at Watson's Bay, Rose Bay, and in North Harbour under stones at low water. Height 8 lines.

184. *CANTHIRIDUS TIBERIANUS.

Trochus tiberianus, Crosse, Journ. de Conch. 1863, p. 381, pl. 13. f. 2.

This beautiful little species is of a pearly yellowish olive-colour, painted with white flames. It is found on sea-weed at low water amongst the rocks at Coodge Bay. Height $2\frac{1}{2}$ lines.

185. ELENCHUS BADIUS.

Trochus badius, Wood, Ind. Test. Supp. pl. 6. f. 46.

Middle Harbour, Port Jackson, in deep water. Of an olive colour, red towards the apex, with the interior of a brilliant iridescent green. Length 1 inch 3 lines.

186. ELENCHUS APICINUS.

Monodonta apicina, Menke, Moll. Nov. Holl. p. 15.

This lovely species may be easily recognized by the fine pencilling of the whorls, which becomes stronger below, and forms a striped

border of white and brown round the lip, and by the exquisite cerulean-blue colour of the pearly interior. Port Jackson, deep water, rare. It is also found at Aldinga Bay, in St. Vincent's Gulf, South Australia. Length 1 inch.

187. *ELENCHUS LEUCOSTIGMA*.

Trochus leucostigma, Menke, Moll. Nov. Holl.

A smaller but handsomely variegated species, mottled with red, white, and olive. The interior of a pearly greenish-blue colour. Deep water, in Port Jackson. Length 8 lines.

188. *BANKIVIA VARIANS*.

Bankivia varians, Beck.

B. purpurascens, Beck.

Dredged in Middle Harbour, on a sandy bottom at 3-4 fathoms. This species is abundant on all the shores of extra-tropical Australia. It varies in colour, from white to purple, rose, grey, amber, or black, and is either plain or banded with black or white bands, the coloured interstices being sometimes painted with longitudinal wavy lines. Length 7 lines.

189. **LEIOPYRGA PICTURATA*.

Leiopyrga picturata, H. & A. Ad. Ann. & Mag. Nat. Hist. Jan. 1863, p. 19.

Dredged in Middle Harbour, Port Jackson. *Leiopyrga* has somewhat the aspect of an umbilicated *Bankivia*, with rounded whorls. It is variously marked and banded with irregular pink lines. Length 6 lines. This species also occurs in South Australia.

190. *TROCHOCOCHLEA TENIATA*.

Trochus tæniatus, Quoy et Gaim. Voy. de l'Astrol. p. 249, pl. 63. f. 15-17.

A fine species, common in Port Jackson, broadly painted with zig-zag wavy longitudinal bands of a deep-purple or black colour, on a greenish-yellow ground. Length $1\frac{1}{2}$ inch.

191. *TROCHOCOCHLEA PORCATA*.

Labio porcata, A. Ad. P. Z. S. 1851, p. 179.

The whorls are strongly carinated, and ornamented with narrow rose-coloured stripes longitudinally. It is equally common with the foregoing species. Length 11 lines.

192. *TROCHOCOCHLEA MULTICARINATA*.

Trochus multicarinatus, Lam. Anim. sans Vert. t. 7. p. 36. no. 15; Quoy, Voy. de l'Astrol. pl. 63. f. 26, 27.

A bold species, strongly concentrically ribbed, and reticulately painted with flowing black lines on a greenish-grey ground. Jervis Bay, and on rocks outside Port Jackson Heads. Length 1 inch 3 lines.

193. *TROCHOCHLEA CONCAMERATA*.

Monodonta concamerata, Gray, Wood's Index Test. Supp. pl. 6. f. 35.

Faintly ridged, and painted with irregular wavy longitudinal lines of yellow on a black ground. *L. striolatus* of Quoy, from Tasmania and South Australia, is much more depressed and has a tessellated style of painting, although regarded as a synonym by Mr. Hanley in his edition of Wood's 'Index.' Same locality as the preceding species. Length 1 inch 4 lines.

194. *MINOLIA VITILIGINEA*.

Trochus vitiligneus, Menke, Moll. Nov. Holl. p. 18.

This species, which is prettily clouded with rose-colour and olive, was dredged in Middle Harbour. It occurs also in South Australia. Height $3\frac{1}{2}$ lines.

195. *MINOLIA ANGULATA*.

Margarita angulata, A. Ad. P. Z. S. 1851, p. 190.

A small flattened species, with the upper portion of the whorls angulated and the umbilicus large and perspective. Dredged in Port Jackson in 5 fathoms. Height 2 lines.

196. *MONILEA CORRUGATA*.

Monilea corrugata, Koch.

Outer Manly Beach and Cabbage-Tree Bay. Height 9 lines.

197. **GIBBULA COXI*.

Gibbula coxi, Angas, P. Z. S. 1867, p. 115.

This species may be recognized by the biangular character of the whorls and its small deep umbilicus. Dredged in Port Jackson. Its nearest ally is *Gibbula preissiana*, Phil., from South Australia. Height $3\frac{1}{2}$ lines.

198. *GIBBULA SULCOSA*.

Gibbula sulcosa, A. Ad. P. Z. S. 1851, p. 186.

Middle Harbour and Coodgee Bay. Height 4 lines.

199. *GIBBULA STRANGEI*.

Gibbula strangei, A. Ad.

Under rocks and stones at low water, Port Jackson. Height $3\frac{1}{2}$ lines.

200. **GIBBULA PICTURATA*.

Gibbula picturata, Ad. & Ang. P. Z. S. 1864, p. 36.

A small richly painted species, varying considerably in colour and markings. Found attached to masses of sea-weed amongst the rocks at Coodgee Bay. Height 3 lines.

Subfam. STOMATELLINÆ.

201. STOMATELLA IMBRICATA.

Stomatella imbricata, Lam. Enc. Méth. pl. 450. f. 2.

Attached to the under surface of large stones at low water in most parts of Port Jackson. Found also in South Australia. Length 1 inch 2 lines.

202. GENA STRIGOSA.

Gena strigosa, A. Ad. P. Z. S. 1850, p. 37.

Under stones at low water. This pretty species is striated and brilliantly nacreous within, whilst the back is finely striated throughout, and variegated with every variety of pattern and colour. It must not be confounded with *G. lutea*, Linn. (*G. auricula*, Lam.), which is smooth and more elongated, and has the spire lateral and rather prominent. Length 10 lines.

Fam. HALIOTIDÆ.

203. HALIOTIS NÆVOSA.

Haliotis nævosa, Martyn, Univ. Conch. v. t. 11. f. 63.

On rocks at low tide on various parts of the coast. Length 6 inches.

204. HALIOTIS COCCO-RADIATA.

Haliotis cocco-radiata, Reeve, P. Z. S. 1846, p. 55.

A pretty species, variously mottled with red, green, and liver-colour. It is commonly found attached to the under surface of stones at Watson's Bay and other parts of Port Jackson. It also occurs in South Australia. Length 2 inches.

Fam. FISSURELLIDÆ.

205. LUCAPINA (GLYPHIS) INCEI.

Fissurella incei, Reeve, Conch. Icon. pl. 10. f. 69.

F. indusica, Reeve.

? *F. lineata*, Sow. Conch. Illus. f. 68.

A fine large cancellated species, more or less rayed with olive bands. On rocks and under stones at low water. This species bears a considerable resemblance to the British *F. reticulata*, although of a much larger size. Length 1 inch 9 lines.

206. *FISSURELLIDÆA CONCATENATA.

Fissurella concatenata, Crosse & Fisch. Journ. de Conch. 1864, p. 348, pl. 3. f. 4-6.

A rare and beautiful species, the surface of which is white and covered with a sort of fine malleated network, resembling the indentations upon a thimble. My specimens are from Kiama and Botany Bay. The type specimen, from which MM. Crosse and Fischer's description is taken, I dredged at Port Adelaide. Length 9 lines.

207. FISSURELLIDÆA SCUTELLA.

Fissurellidæa scutella, Gray, B. M.; Sow. Conch. Ill. f. 34.

F. trapesina, Sow. P. Z. S. 1834; Conch. Ill. f. 34; Thes. Conch. pl. 9. f. 207.

Botany Bay. Found also at the Cape of Good Hope. Length 10 lines.

208. FISSURELLIDÆA NIGRITA.

Fissurellidæa nigrata, Sow. P. Z. S. 1834, p. 127; Thes. Conch. pl. 8. f. 196.

Found also in Tasmania and South Australia. Length 10 lines.

209. EMARGINULA (HEMITOMA) RUGOSA.

Emarginula rugosa, Quoy et Gaim. Voy. de l'Astrolabe.

E. aspera, Gould, Exped. Shells. p. 12; Sow. Thes. Conch. pl. 13. figs. 92, 93, 95, 96-102.

This shell varies considerably, and has been described under various names by different authors. It is not uncommon on rocks and under stones in Port Jackson; it is also found in South Australia and Tasmania. Length 11 lines.

210. EMARGINULA (CLYPIDINA) STELLATA.

Emarginula stellata, A. Ad. P. Z. S. 1851, p. 87; Sow. Thes. Conch. pl. 13. f. 103.

Less common than the preceding. Watson's Bay and Coodgee Beach. Length 10 lines.

211. EMARGINULA DILECTA.

Emarginula dilecta, A. Adams, P. Z. S. 1851, p. 85; Sow. Thes. Conch. *Emarginula*, pl. 10. f. 5.

Coodgee and Middle Harbour. Length 7 lines. A pretty, white, cancellated species, with the anterior margin moderately fissured.

212. SCUTUS ELONGATUS.

Parmophorus elongatus, Lam.

P. lævis, Blain.

Scutus angustatus, A. Ad. in Thes. Conch. Fissurellidæ, pls. 13 & 14. figs. 1, 2, 10, 21.

This species is very common amongst the rocks at low water in some of the bays in Port Jackson, and at various localities along the coast. The animal is very large and black. Length of shell $3\frac{1}{4}$ inches.

213. TUGALIA OSSEA.

Tugalia ossea, Gould, Exped. Shells; Sow. Thes. Conch. Fissurellidæ, pl. 14. f. 18.

Under stones at low water near Port Jackson Heads, rare. Length $9\frac{1}{2}$ lines.

Fam. DENTALIIDÆ.

214. ANTALIS ERECTA.

Dentalium erectum, Sow. Thes. Conch. pl. 13. f. 55.

Dredged near the "Sow and Pigs" bank, Port Jackson. Length of my specimen 1 inch.

Fam. TECTURIDÆ.

215. TECTURA JACKSONIENSIS.

Patella jacksoniensis, Reeve, Conch. Icon. pl. 39. f. 127 *a, b*.

On rocks at low tide. Length 9 lines.

216. *TECTURA SCABRILIRATA.

Acmaea scabrilirata, Angas, P. Z. S. 1865, p. 154.

Under stones amongst the rocks at low tides. Found also in Port Phillip and South Australia. Length 6 lines.

217. TECTURA STELLARIS.

Patelloïda stellaris, Quoy et Gaim. Voy. de l'Astr. pl. 71. f. 1-4.

An elegant species, with bold ribs projecting outwards from the margin, so as to give it a stelliform appearance. Under stones at very low spring tides at Kiama and outside Port Jackson Heads. Sometimes found in the stomachs of Bream caught along the coast. Length 1 inch.

218. *TECTURA SUBUNDULATA.

Acmaea subundulata, Angas, P. Z. S. 1865, p. 155.

Attached to stones at low water. Found also in Port Phillip and South Australia. Length 8 lines.

219. TECTURA SEPTIFORMIS.

Patelloïda septiformis, Quoy et Gaim. Voy. de l'Astrol. pl. 71. f. 43, 44.

On rocks between tide-marks at Kiama, and near Newcastle, New South Wales. Length 10 lines.

Fam. GADINIIDÆ.

220. GADINIA PENTIGONIOSTOMA.

Gadinia pentigoniostoma, Sow. Conch. Ill.

A depressedly conical white shell, strongly radiately ridged, and polished inside. Coodgee Bay. Length 9 lines.

221. *GADINIA CONICA.

Gadinia conica, Angas, P. Z. S. 1867, p. 115.

A small and very conical species, from shell-sand, Coodgee Bay. Length 4 lines.

Fam. PATELLIDÆ.

222. PATELLA TRAMOSERICA.

Patella tramoserica, Mart. Univ. Conch. i. pl. 16.

This fine species is abundant everywhere, adhering to the rocks between tide-marks. It varies considerably in colour and markings, typical specimens being characterized by a golden-yellow tinge, more or less articulated with black and scarlet. Length 2 inches.

223. PATELLA COSTATA.

Patella costata, Sowerby, Voy. of Beagle.

A boldly ribbed conical shell, with a pectinated margin, edged with black. On rocks at Coodgee and Wollongong. Length $1\frac{1}{4}$ inch.

224. PATELLA ACULEATA.

Patella aculeata, Reeve, Conch. Icon. pl. 32. f. 90.

Strongly nodulously ribbed, of a pale colour, both within and without. Occasionally met with on the rocks outside the Heads. Length $1\frac{1}{2}$ inch.

225. PATELLA SQUAMIFERA.

Patella squamifera, Reeve, Conch. Icon. pl. 32. f. 94 a, b.

A small squamately ribbed depressed species, of rare occurrence. Rocks near Wollongong and Bondi Bay. Length 10 lines.

226. PATELLA PENTAGONA.

Patella pentagona, Born, Mus. Test. Vindob.

P. stellaformis, Reeve in Conch. Syst.; Conch. Icon. pl. 20. f. 48 a, b, c.

A single example of this species was found on the rocks near Port Jackson Heads. Length 8 lines.

Fam. CHITONIDÆ.

227. LOPHYRUS AUSTRALIS.

Chiton australis, Sow. Mag. Nat. Hist. 1840; Conch. Ill. f. 46.

Common under stones in Port Jackson. Of a dark olive-colour. This is the largest species found in New South Wales. Length 3 inches.

228. LOPHYRUS CONCENTRICUS.

Chiton concentricus, Reeve, Conch. Icon. pl. 16. f. 95.

A very beautiful longitudinally ridged species, with the terminal valves concentrically grooved; mottled with green and straw-colour, the second valve sometimes blood-colour or scarlet. Under stones at Watson's Bay, at very low tide. Length $1\frac{1}{2}$ inch.

229. *LOPHYRUS GLAUCUS*.*Chiton glaucus*, Gray.*C. quoyi*, Desh. Anim. sans Vert. vii. p. 509.*C. viridis*, Quoy.

Very variable in colour. The green variety is *C. quoyi* of Desh. Rare in Port Jackson. Length 1 inch.

230. *LOPHYRUS MURICATUS*.*Chiton muricatus*, A. Ad. P. Z. S. 1852, p. 91.*C. carnosus*, Carp. MS. Coll. Cuming.*C. limans*, Carp. MS. Coll. Cuming.

A very charming species, of rare occurrence in Port Jackson, having the outer edge of the valves armed with short muricated spines. It somewhat resembles *L. concentricus*, but has the anterior terminal valve longitudinally radiate, and varies in colour from dull green to orange and buff. Length 1 inch.

231. *LOPHYRUS JUGOSUS*.*Chiton jugosus*, Gould, Exped. Shells, p. 3.

A prettily mottled species, with the terminal valves smooth, of which a few examples have been found at very low tides near Camp Cove. Length $9\frac{1}{2}$ lines.

232. **LOPHYRUS SMARAGDINUS*.*Lophyrus smaragdinus*, Angas, P. Z. S. 1867, p. 115.

Of a pale bluish-green colour, sometimes white-mottled, and nearly smooth; faintly striated under the lens. Port Jackson. Length 6 lines.

233. *LEPIDOPLEURUS PROTEUS*.*Chiton proteus*, Reeve, Conch. Icon. pl. 18. f. 111.*C. fruticosus*, Gould, Exp. Shells, p. 4.

Common under stones. The colours vary, some specimens being curiously mottled with white or pale orange on an olive ground. Length $1\frac{1}{2}$ inch.

234. *LEPIDOPLEURUS LONGICYMBA*.*Chiton longicymba*, De Blainv. ; Sow. Conch. Illus. f. 67.

This pretty species is abundant under stones, especially at Watson's Bay. Its variations in colour are many: one variety has a broad white stripe along the back, another is pale straw-colour, and a third is spotted with black on a reddish ground. Length 1 inch.

235. *LEPIDOPLEURUS USTULATUS*.*Chiton ustulatus*, Reeve, Conch. Icon. pl. 17. f. 102.

Of a dull brown colour. Watson's Bay, under stones. Length 1 inch 4 lines.

236. *LEPIDOPLEURUS ANTIQUUS*.

Chiton antiquus, Reeve, Conch. Icon. pl. 25. f. 169.

C. apparatus, Carp.

C. elenensis, Sow.

A highly sculptured species, with two broad divaricating ridges on each side of the valves. Port Jackson, rare. Length 10 lines.

237. **TONICIA CARPENTERI*.

Tonicia carpenteri, Angas, P. Z. S. 1867, p. 116.

A pretty, ovate species, concentrically subimbricately sculptured, with alternate pale and dark spots at the hinder edges of the valves, and the umbo nearly terminal. Port Jackson, very rare. Length 9 lines.

238. *LEPTOCHITON VERSICOLOR*.

Leptochiton versicolor, A. Ad. P. Z. S. 1852, p. 92, pl. 16. f. 5.

A nearly smooth species, delicately shagreened under the lens, of very rare occurrence. Found near the Heads of Botany Bay. It is variegated with maroon and olive. Length 1 inch.

239. *ONITHOCHITON INCEI*.

Chiton incei, Reeve, Conch. Icon. sp. 94.

A beautiful species, with the valves longitudinally crenated, and clouded more or less with olive, green, and rosy flesh-colour. Occurs under stones at Watson's Bay, at very low tides. Length $1\frac{1}{2}$ inch.

240. **ONITHOCHITON RUGULOSUS*.

Onithochiton regulosus, Angas, P. Z. S. 1867, p. 115.

A nodulously sculptured species, having the valves bordered with green, and ornamented with concentric wavy bands of yellowish olive. Port Jackson, very rare. Length 8 lines.

241. *CHITON PICEUS*.

Chiton piceus, Gmel. Syst. Nat. p. 3204.

? *C. magellanicus*, Lam.

? *C. incanus*, Gould, Exped. Shells.

This very common species is freely distributed on most parts of the coast of New South Wales. Dwelling in cavities on the upper surfaces of rocks exposed to the full action of the waves, the valves are generally more or less worn and destitute of character. A dark stripe runs along the centre of the umbones, and the mantle is covered with alternate bands of black and white calcareous spicula. Length $2\frac{1}{2}$ inches.

242. *CHÆTOPLEURA RUGOSA*.

Chaetopleura rugosa, Gray; Sow. Conch. Ill. f. 49.

This species is but rarely met with in Port Jackson. The mantle is covered with straggling horny bristles, and the valves corrugately sculptured. Length 10 lines.

243. LORICA CIMOLIA.

Chiton cimolius, Reeve, Conch. Icon. pl. 21. f. 141.

C. volvox, Reeve, Conch. Icon. pl. 6. f. 31.

This fine species may at once be recognized by the fissure of its posterior margin. The valves are longitudinally sculptured, and the mantle squamous. It is to be met with occasionally under rocks and stones, at very low tide, about Watson's Bay and Middle Harbour. Length $2\frac{1}{2}$ inches. This *Lorica* is also found at Port Lincoln, in South Australia.

244. PLAXIPHORA PETHOLATA.

Chiton petholatus, Sow. Conch. Illust. f. 65, 66.

This *Chiton*, though common in South Australia, is but seldom met with in Port Jackson, and then not in good condition. The valves are rugosely sculptured at the sides, and the mantle is beset with bifurcated bristles proceeding from a double series of pores. Length $2\frac{1}{4}$ inches.

245. *ACANTHOCHITES COSTATUS.

Acanthochites costatus, H. Ad. & Ang. P. Z. S. 1864, p. 194.

Only three or four specimens of this species were taken, at Watson's Bay, during an unusually low tide. Length 8 lines.

246. ACANTHOCHITES SCUTIGER.

Acanthochites scutiger, Adams & Reeve, Voy. Samarang; Reeve, Conch. Icon. pl. 27. f. 178.

Under stones at Watson's Bay. This little species may be recognized by the tufts of silvery bristles surrounding the pores of the mantle. Length $\frac{1}{2}$ inch.

247. *ACANTHOCHITES CARINATUS.

Acanthochites carinatus, H. Ad. & Ang. P. Z. S. 1864, p. 194.

A single specimen only of this fine new species was found, in Port Jackson. The plates are whitish and finely granulated, and ridged along their summits with black. Length 1 inch 3 lines.

248. *MICROPLAX GRAYI.

Microplax grayi, H. Ad. & Ang. P. Z. S. 1864, p. 194.

A single example of this new genus was procured, adhering to the under surface of a stone dredged in Watson's Bay. It is figured in 'Proc. Zool. Soc.' 1865, pl. 11. f. 16, 17. Length 6 lines.

249. CRYPTOPLAX STRIATUS.

Chitonellus striatus, Lam. Anim. sans Vert. vol. . p. 317.

Chiton striatus, Sow. Conch. Illus. f. 62.

? *C. oculatus*, Quoy et Gaim. Voy. de l'Astr. iii. p. 410, pl. 72. f. 37, 38.

Not uncommon under stones and in crevices of rocks, at low water, in various parts of Port Jackson. Length 3 inches.

On comparing the specimens in the Cumingian Collection (now in the British Museum) of *C. gunni*, Reeve, and *C. rostratus*, Reeve, I can detect no characters which appear to separate them specifically from *C. striatus*, Lam., and I am inclined to regard them all as varieties of that species. Specimens in my own cabinet from Port Jackson, Port Adelaide, Port Lincoln, and Tasmania seem all to belong to the same species, displaying but slight variations in the angularity and breadth of the valves.

Order TECTIBRANCHIATA.

Fam. ACTÆONIDÆ.

250. BUCCINULUS AFFINIS.

Buccinulus affinis, A. Ad.

This pretty species, more slender and elongated than *B. solidulus*, is very finely tessellately painted with brown or black on a white ground, having sometimes one or two white bands. Dredged in Port Jackson. It also occurs in Japan. Length 9 lines.

251. MYONIA CONCINNA.

Monoptygma concinna, A. Ad. in Thes. Conch.

An elongated white shell, spirally grooved throughout. Dredged in Port Jackson. Length $\frac{1}{2}$ inch.

252. *LEUCOTINA ESTHER.

Leucotina esther, Angas, P. Z. S. 1867, p. 116.

A small grey species, with rounded whorls finely striately grooved. Dredged in Port Jackson. Length $2\frac{1}{4}$ lines.

Fam. APLUSTRIDÆ.

253. HYDATINA PHYSIS.

Bulla physis, Linn., Mart. t. 21. f. 196, 197.

Hydatina filosa, Schum.

This fine shell may be readily distinguished by the narrow zebra-like bands encircling its entire outer surface. It occurs in muddy bays, especially at Vacluse Bay, Port Jackson, and at Botany Bay. At Moreton Bay it attains the length of two inches. The largest Port Jackson specimen measures 1 inch 5 lines.

254. BULLINA LINEATA.

Bulla lineata, Wood, Index Test. Sup. pl. 3; Sow. Thes. Conch. pl. 120. f. 2.

B. lauta, Pease.

? *B. scabra*, Chemn.

No one can fail to detect this pretty species, banded with two
Proc. Zool. Soc.—1867, No. XV.

lines of rose-colour, and painted with wavy longitudinal stripes of the same hue. It forms a beautiful object in the water, when crawling about on the sandy bottoms of the rock-pools left by the receding tide, the expanded membranaceous foot of the animal being bordered with azure-blue. On examination I found it had a small, horny, linear, transverse operculum like the *Actæonidæ*, and ought therefore probably to be included in that family. Rock-pools at Coodgee Bay and Middle Harbour, at low spring tides. Length 8 lines.

Fam. CYLICHNIDÆ.

255. CYLICHNA ARACHIS.

Bulla arachis, Quoy, Voy. de l'Astr.; Sow. Thes. Conch. p. 590. f. 133, 134.

A solid, cylindrical, white shell, covered with a rust-coloured epidermis. Dredged in Port Jackson. This species is found also at Wollongong and Port Stephen, in sandy mud. Length 8 lines.

256. TORNATINA FUSIFORMIS.

Tornatina fusiformis, A. Ad. Thes. Conch. p. 570, pl. 121. f. 37.

A little, white, shining species, dredged at Port Stephen and Port Jackson, in 4 fathoms. Length 3 lines.

Fam. BULLIDÆ.

257. BULLA OBLONGA.

Bulla oblonga, A. Adams, Thes. Conch. p. 577, pl. 123. f. 74.

This large and somewhat elongated species is common on muddy bottoms in all the bays along the coast of New South Wales. It ranges westward to Port Phillip, South Australia, and Swan River; and, according to Cuming, is found in the Philippines and South-Sea Islands. Length 2 inches 4 lines. This shell has hitherto been confounded by some authors with *B. australis* of Quoy & Gaim., which is found in Tahiti.

258. BULLA PUNCTULATA.

Bulla punctulata, A. Adams, Thes. Conch. p. 577, pl. 123. f. 77.

Clouded with clusters of black and white punctated spots on a light-brown ground. Found in deep water, in sandy mud. Rare in Port Jackson. It is found also in New Caledonia. Length 1 inch 4 lines.

259. BULLA SOLIDA.

Bulla solida, Gmel. (not Bruguière) MS. in Coll. Cuming.

A prettily painted species, peculiarly marked with large angular blotches of rose liver-colour on a greyish-white ground. Middle Harbour, Port Jackson. Length 1 inch.

260. *BULLA MAGDELUS*.*Bulla magdelus*, Lister.*B. ovulum*, Gould (MS. in Coll. Cuming).

A brown-clouded species, rather solid, and more swollen than *B. punctulata*. Middle Harbour and Long Bay. Length 1 inch 1 line.

261. *HAMINIA BREVIS*.*Bulla brevis*, Quoy et Gaim. Voy. de l'Astrol. pl. 26. f. 36, 37.

Dredged in Middle Harbour; and Port Stephen, New South Wales. Length 8 lines.

262. *AKERA SOLUTA*.*Bulla soluta*, Chem., Mart. Hist. Conch. x. t. 46. f. 1359-1361.*B. tenuis*, A. Adams; Sow. Thes. Conch. pl. 121. f. 45.

Found in sandy mud, Botany Bay. It is also found in the Philippines; Zanzibar; and Spencer's Gulf, South Australia; also in Torres Straits. It varies greatly in size. Length of Botany Bay specimens 10 lines, Spencer's Gulf specimens 1 inch 5 lines, Zanzibar specimens 1 inch 9 lines.

Fam. PHILINIDÆ.

263. **PHILINE ANGASI*.*Bulla angasi*, Crosse, Journ. de Conch. 1865, pl. 2. f. 8.

Generally distributed along the Australian coasts. Common on mud-banks. Nearly allied to *Bulla coreanica* of A. Ad., from the Korean archipelago. Length 1 inch 4 lines.

The gizzard of this species resembles in form that of the British *B. quadripartita*.

264. **CHELIDONURA ADAMSI*.*Chelidonura adamsi*, Angas, P. Z. S. 1867, p. 116.

The shell is small, flat, thin, and patulous, with the outer lip produced posteriorly, and is concealed in the thickness of the mantle.

The animal of *C. adamsi* is extremely beautiful. It is of a velvet-black, having the mantle and the two long projecting tails bordered with lines of cobalt-blue and gold. On the back is a small white crescent-shaped spot. Found in a rock-pool at low water, at the "Bottle and Glass," Vacluse Bay, Port Jackson. Length of animal 2 inches.

The only other species of the genus as yet described is the *C. hirundinina* of Quoy, from the Mauritius, the animal of which is of fine blue and emerald-green colours.

Fam. APLYSIIDÆ.

265. *DOLABELLA SCAPULA*.*Dolabella scapula*, Martyn.

D. rumphii, Cuvier, Ann. du Muséum, v. p. 437, pl. 29. f. 1 ; Rang, Hist. Nat. des Aplysiens, pl. 1.

D. callosa, Lam. Anim. sans Vert. prem. edit. f. 62.

This common species is widely distributed throughout the Indian and Pacific Oceans. The animal is of a blackish olive-colour, from 7 to 10 inches long, and emits a purple fluid when molested ; the shell internal, flattened, triangular, callous at the apex, and covered with a brown horny epidermis. Height 2 inches, breadth 1 inch 3 lines. Found on sandy mud at low water, especially in the bays of Paramatta River.

266. APLYSIA TIGRINA.

Aplysia tigrina, Rang, Hist. Nat. des Aplysiens, pl. 11.

Animal olive, mottled with black. Shell internal, thin, horn-colour, oblong, produced, and curved at the apex. Length 1 inch 3 lines, breadth 10 lines. Middle Harbour and Coodgee Bay.

267. SYPHONOTA KERAUDRENI.

Aplysia keraudreni, Rang, Hist. Nat. des Aplysiens, pl. 13.

A fine, large species ; the animal clouded with olive and grey. Shell yellowish brown, faintly concentrically striated, rather flat, oval, and triangular at the apex. Length 2 inches, breadth 1½ inch. Port Jackson.

I have the shells of three other species of *Aplysiidae* from Port Jackson, none of which appear to have been described ; but not knowing the animals, I hesitate to publish them.

Subfam. OPERCULATINÆ.

268. OPERCULATUM INDICUM.

Umbrella indica, Lam., Chemn. Conch. v. p. 10, pl. 169. f. 1645, 1646.

This species, which ranges throughout the Indo-Pacific province, occurring in the Philippines, Mauritius, and other places, is to be met with at very low spring tides amongst the rocks at Cabbage-tree Cove, outside the North Head of Port Jackson, also at Botany Bay. The animal is very large, and of a greenish-yellow colour, having the shell external. Length of a specimen taken in Botany Bay 4 inches.

Order NUDIBRANCHIATA.

The following species of Naked-gilled Gasteropoda have already been found in Port Jackson and its vicinity :—

Fam. DORIDIDÆ.

269. **DORIS VARIABILIS*, Angas, Journ. de Conch. 1864, p. 44, pl. 4. f. 1.

270. **DORIS DENISONI*, Angas, Journ. de Conch. 1864, p. 45, pl. 4. f. 2.

271. **DORIS CHRYSODERMA*, Angas, ib. p. 46, pl. 4. f. 3.

272. **DORIS ARBUTUS*, Angas, ib. p. 47, pl. 4. f. 4.

273. **DORIS PANTHERINA*, Angas, ib. p. 47, pl. 4. f. 5.

274. **DORIS NODULOSA*, Angas, ib. p. 48, pl. 4. f. 6.

275. **DORIS CARNEOLA*, Angas, ib. p. 48, pl. 4. f. 7.

276. **ACTINODORIS AUSTRALIS*, Angas, ib. p. 49, pl. 4. f. 8.

277. **ANGASIELLA EDWARDSII*, Angas, ib. p. 49, pl. 4. f. 9.

Fam. GONIODORIDIDÆ.

278. *GONIODORIS ATROMARGINATA*.

Doris atromarginata, Cuvier, Ann. Mus. i. 4. p. 473, pl. 2. f. 6.

279. **GONIODORIS BENNETTI*, Angas, Journ. de Conch. 1864, p. 51, pl. 4. f. 10.

280. **GONIODORIS LORINGI*, Angas, ib. p. 52, pl. 4. f. 11.

281. **GONIODORIS FESTIVA*, Angas, ib. p. 53, pl. 4. f. 12.

282. **GONIODORIS DAPHNE*, Angas, ib. p. 54, pl. 5. f. 3.

283. **GONIODORIS CROSSEI*, Angas, ib. p. 54, pl. 5. f. 1.

284. **GONIODORIS SPLENDIDA*, Angas, ib. p. 55, pl. 5. f. 2.

285. **GONIODORIS VERRUCOSA*, Crosse, Journ. de Conch. 1864, p. 56, pl. 5. f. 4.

286. **GONIODORIS ERINACEUS*, Crosse, ib. p. 57, pl. 5. f. 3.

Fam. POLYCERIDÆ.

287. **POLYCERA COOKI*, Angas, Journ. de Conch. 1864, p. 58, pl. 5. f. 6.

288. **PLOCAMOPHORUS IMPERIALIS*, Angas, ib. p. 59, pl. 5. f. 7.

Fam. TRIOPIDÆ.

289. **TRIOPA YATESI*, Angas, ib. p. 60, pl. 5. f. 8.

Fam. DENDRONOTIDÆ.

290. **BORNELLA HERMANNI*, Angas, ib. p. 61, pl. 6. f. 1.

Fam. MELIBÆIDÆ.

291. **MELIBÆA AUSTRALIS*, Angas, ib. p. 62, pl. 6. f. 2.

Fam. PROCTONOTIDÆ.

292. **JANUS SANGUINEUS*, Angas, Journ. de Conch. 1864, p. 63, pl. 6. f. 5.

Fam. ÆOLIDIDÆ.

293. **ÆOLIS FOULISI*, Angas, ib. p. 64, pl. 6. f. 3.
 294. **ÆOLIS MACLEAYI*, Angas, ib. p. 65, pl. 6. f. 4.
 295. **FLABELLINA IANTHINA*, Angas, ib. p. 66, pl. 6. f. 6.
 296. **FLABELLINA ORNATA*, Angas, ib. p. 67, pl. 6. f. 7.
 297. **FLABELLINA NEWCOMBI*, Angas, ib. p. 68, pl. 6. f. 8.

Fam. ELYSIIDÆ.

298. **ELYSIA COODGEENSIS*, Angas, ib. p. 69, pl. 6. f. 9.

Fam. GLAUCINÆ.

299. *GLAUCUS*, sp.?

Dark blue. Washed ashore on the outer beaches, along with *Velella*, on which it feeds.

Subclass HETEROPODA.

Fam. IANTHINIDÆ.

300. *IANTHINA VIOLACEA*.

Helix violacea, Bolten, Virg. p. 93. n. 953 (1798).

Ianthina casta, Reeve, Conch. Icon. pl. 1. f. 4.

I. depressa, Reeve, Conch. Icon. pl. 3. f. 14.

Pelagic. Washed ashore on the outer beaches. Deep violet below the periphery. Height 1 inch.

301. *IANTHINA IANTHINA*.

Helix ianthina, Linn.

Ianthina fragilis, Lam.

I. communis, Lam.

I. bicolor, Menke.

I. penicephala, Péron.

I. striolata, Carp.

Pelagic. Washed ashore at Manly Beach, Bondi, and Kiama. Deep violet below, with a white band round the columella. Height 8 lines.

This and the foregoing species seem to be worldwide in the warmer regions of the three great oceans.

302. *IANTHINA DECOLLATA*.

Ianthina decollata, Carp. Cat. Reigen Coll. in Brit. Mus. p. 187.

Pelagic. An elegant species, with globular whorls and a produced

spire; the columella is prolonged at the lower part, and the entire shell is of a peculiar rosy-violet hue. Found on the sands after storms, at Bondi &c. Height 1 inch.

303. *IANTHINA (IODINA) EXIGUA.*

Ianthina exigua, Lam. Anim. sans Vert. vi. p. 206.

I. bifida, Nuttall, Jay's Cat. p. 295.

I. capreolata, Mont. Journ. de Conch. 1860, pl. 2. f. 4.

Pelagic, worldwide. Varying greatly in size; height of largest New South Wales specimens 8 lines.

This species may be known by its sculpture, of densely set lamellar striae, and by the very deep notch in the outer lip, which gives it a bifid structure.

Macgillivrayia spinigera and *Cheletropis huxleyi* are often washed ashore on Coodgee Beach. They are now ascertained to be only the pelagic fry of certain Gasteropods.

Subclass PULMONIFERA.

Fam. ELLOBIIDÆ.

304. *CASSIDULA ZONATA.*

Cassidula zonata, H. & A. Ad. P. Z. S. 1854, p. 32.

This species is found amongst the mangrove swamps and samphire marshes at Cook's River, Botany Bay. Length $\frac{1}{2}$ inch.

Subfam. MELAMPINÆ.

305. *OPHICARDILUS AUSTRALIS.*

Auricula australis, Quoy et Gaim. Voy. de l'Astrol. ii. pl. 13. f. 34-38.

Melampus ovatus, Gray.

This species is common on samphire swamps about Shoalhaven and Cook's River. It is dark olive with pale bands. Length 7 lines.

306. *OPHICARDELUS SULCATUS.*

Laimodonta sulcata, H. & A. Ad. P. Z. S. 1854, p. 34.

Very like the preceding, excepting that the spire is transversely sulcately ridged. Length 7 lines.

307. *OPHICARDELUS QUOYI.*

Laimodonta quoyi, H. & A. Ad. P. Z. S. 1854, p. 34.

Port Jackson. Shorter and stouter than the preceding species; of a uniform brown colour, without bands. Length 5 lines.

308. *MARINULA XANTHOSTOMA.*

Marinula xanthostoma, H. & A. Ad. P. Z. S. 1854, p. 35.

This pretty little species may be recognized by the three project-

ing plaits on the inner lip, of which the uppermost one is the largest. It is of a pale lilac colour, when denuded of its brown epidermis. Found at Shoalhaven and in Port Jackson. Length 4 lines.

Fam. AMPHIBOLIDÆ.

309. AMPULLARINA QUOYANA.

Ampullarina quoyana, Desh.

Banded and painted with zigzag brown lines. Found at Rushcutter's Bay, and in mangrove and samphire swamps at Cook's River and Shoalhaven, &c. Length 8 lines.

310. AMPULLARINA FRAGILIS.

Ampullacera fragilis, Quoy et Gaim. Voy. de l'Astr.

Banks of Paramatta River. In this species the whorls are rounder and more depressed; the shell is thinner, and painted with one broad brown band, or several narrow thread-like lines. Length 5 lines.

Fam. SIPHONARIIDÆ.

311. SIPHONARIA SCABRA.

Siphonaria scabra, Reeve, Conch. Icon. pl. 1. f. 2.

Allied to *S. diemenensis*, Quoy, but with the purple linear painting running further up into the interior. Common in Port Jackson. Length 1 inch.

312. SIPHONARIA DENTICULATA.

Siphonaria denticulata, Quoy et Gaim. Voy. de l'Astr. ii. p. 340, pl. 25. f. 19, 20.

A fine species, distinguishable by the livid-brown colouring of the interior and the white spots round the inner margin. Common on rocks and jetty-piles in Port Jackson. Length 1 inch 4 lines.

313. SIPHONARIA FUNICULATA.

Siphonaria funiculata, Reeve, Conch. Icon. pl. 2. f. 6 *a*, *b*.

A conical species, ribbed with white, denticulated and stained in the interior with brown. It varies considerably in colour. Found also in Tasmania. Length 9 lines.

314. SIPHONARIA BIFURCATA.

Siphonaria bifurcata, Reeve, Conch. Icon. pl. 5. f. 22.

Depressedly conical, with broad, distant ribs, the interstices of which are ridged and stained with black. Interior white, irregularly marked with brown round the edge. Length 1 inch.

315. SIPHONARIA COCHLEARIFORMIS.

Siphonaria cochleariformis, Reeve, Conch. Icon. pl. 6. f. 28.

A flattened pale-coloured species, with a broad projecting sinus. On jetty-piles, Watson's Bay. Length 1 inch.

316. SIPHONARIA ATRA.

Siphonaria atra, Quoy et Gaim. Voy. de l'Astrol. vol. ii. p. 337, pl. 25. f. 41, 42.

Painted inside with broad black stripes. Found also in Japan and the Pacific Islands. Length 1 inch.

5. Notes on *Zoanthinæ*, with the Descriptions of some New Genera. By Dr. J. E. GRAY, F.R.S.

M. Milne-Edwards, in his 'Coralliaires' (vol. i. p. 226), divides the *Actinidæ* into two groups:—one in which the covering of the body remains soft and does not form a polyperoid; and, secondly, the *Zoanthinæ*, in which the integument of the body thickens and is strengthened with sclerotes, so as to form a coriaceous polyperoid. But in the larger character of the family (at p. 298) he adds that they are aggregate polypes, which multiply by basal buds formed of the tegumental tissues; and he confines the family to the genera *Zoanthus* and *Palythoa*,—the first arising from root-like stolons, and the other from a broad laminal expansion.

There can be no doubt that the group so defined is very natural; but there are several genera of *Actininae* that have considerable relation to *Zoanthus*, not mentioned by Milne-Edwards, which do not come under either of these characters: that is to say, there are some which have the outer skin thick and strengthened with imbedded sand or calcareous particles, which are not aggregate and do not increase by basal buds, arising from neither root-like fibres nor an expanded base, but which are free; on the other hand, there are other genera which do not arise from basal buds, some of which have a thick cartilaginous skin not strengthened by sand or calcareous concretions, and others which have a thin membranaceous skin.

All these genera have only a single or double row of very short tentacles, which are placed round the edge of the oral disk far from the mouth, which when the oral disk is contracted are completely hidden.

I think that these animals should form a family distinct from *Actinidæ*, which may be called *Zoanthidæ*.

The zoanthoid polypes, in Lesueur, Dana, and Milne-Edwards's 'Coralliaires,' are divided into groups, according to the form of the base from which they arise,—some, as the *Zoanthi*, having cylindrical stolons, and others, as the *Palythoa*, an expanded foliaceous base; the latter are again divided according to whether the polypes are entirely or partially separate, or confluent nearly to the mouth of the cells,—all, no doubt, very good characters for the separation of the species into groups.

They separate themselves into two very natural groups, according to the structure of the external surfaces of the polypes.

In many, which may be called *Zoanthi malacodermi*, or soft-

skinned *Zoanthi*, or *Zoanthinæ*, the surface of the polype is smooth, soft, and fleshy.

Duchassaing and Michellot, in their 'Essay on the Corals of the West Indies,' have established some additional genera.

The base expanded, laminar.

1. MAMMILLIFERA, Lesueur.

Mammillifera, Duchassaing & Michellot, Mém. Coral. des Antilles, 51.

The base slender, subcylindrical, creeping.

2. ZOANTHUS, Cuvier, 179; M.-Edw. Coral. 299.

Zoantha, Lamk.

1. ZOANTHUS SOCIATUS, Ellis, Zooph.

2. ZOANTHUS ALDERI, Gosse, Brit. Sea Anem. 305, t. 9. f. 8, t. 12. f. 5.

Hab. Coast of Britain.

See other species (Duchassaing & Michellot, Mém. Coral. des Antilles, 1860, p. 49; Dana, Zoophytes, 423).

3. PALYTHOA.

The polypes close together, arising from a net-like anastomosing linear base.

PALYTHOA BERTHOLETI.

Solitary, rarely irregularly aggregate.

4. ISAURUS, Gray, Spic. Zool. 8, 1825.

Isaure, Savigny.

Isaurus, Duchassaing & Michellot, Mém. Coral. des Antilles, 1860, p. 51, t. 8. f. 10.

ISAURUS TUBERCULATUS, Gray, Spic. Zool. 8, t. 6. f. 3, 1825.

Hab. —.

B.M.

This genus and species was described and figured in 1825 from a specimen in the British Museum.

5. ? ORINIA, Duchassaing & Michellot, Mém. Coral. des Antilles, 54.
Separate.

6. PALES.

Body cylindrical; isolated, solitary, clustered, or sometimes proliferous, but each specimen having a separate base; outer skin smooth, thin, olive-brown, slightly concentrically wrinkled; the tentacles numerous. The internal laminæ numerous, slender, only

slightly elevated, straight and parallel above, with a thickened edge and sinuous below.

PALES CLIFTONI. (Fig. 1, p. 236.)

Hab. Western Australia (*Mr. Clifton*).

The bodies are from $\frac{1}{3}$ to $\frac{1}{2}$ inch in diameter; but they vary greatly in length, some being as much as 2 inches long; but the general length seems to be about an inch,—that is to say, of the specimens in spirits; when alive they are probably longer. They are found attached to shells, both isolated and in clusters, and the larger ones are attached to the base of each other, forming a somewhat stellate cluster, as if they were free floating in the sea.

In others (the *Zoanthi sabuliferi*, or *Palythæina*) the outer surface of the polypes is hard, crustaceous, and thickened with imbedded grains of sand.

This group may be divided into sections by the habit of the animal, some being attached to marine bodies, and others living free.

I. Coral free, unattached.

1. SPHENOPUS, Steenstrup, Overs. Dansk. Vidensk. Selskabs. Forhandl. 1856, p. 37.

Sabella, sp., Schröter, Gmelin.

The type of this genus is an animal that was long ago figured as a *Sabella* by Schröter, and named from Schröter's figure *Sabella marsupialis* by Gmelin. Professor Steenstrup has found the original specimens in spirits, which were collected by Johns, the Moravian missionary, in Tranquebar, and has described them and their anatomy, under the name of *Sphenopus marsupialis*, in the 'Proceedings of the Danish Academy' for 1856. But I am not aware that any other specimen had been collected, until those which were sent to the Liverpool Museum. M. Milne-Edwards evidently has not seen them; for he places the genus *Stenopus* with the free-bodied, soft-skinned *Actinæ*, giving a very short account of the animal, evidently extracted from Steenstrup's paper, and without even mentioning the habitat.

The body is free, rather variable in shape, but more or less like a small flask; the upper part is cylindrical, truncated when contracted, with a central opening; the hinder part is more or less compressed and half ovate, the hinder portion in some specimens being truncated or rounded, and in others more or less produced, with a blunt rounded end. The outer surface is hard, formed of agglutinated sand closely imbedded in a thick cartilaginous case. The upper truncated part of the case has some indistinct lines, which are often scarcely to be distinguished, radiating towards the central aperture; in one of the specimens there are three round sunken pits on each side of the neck of the body, just under the swollen edge of the truncated upper end. In some of the other specimens there are slightly

impressed longitudinal lines on the neck, where these pits are placed in the specimen above described.

The inner coat of the body is membranaceous, with sixteen membranaceous folds, which extend to the base of the body; the lower part of the cavity is filled with vermicular cylindrical ovaries.

The mouth of the outer case, which is much contracted in spirits, is furnished with a single series of short tentacles. The laminae of the stomach have a cartilaginous edge; they extend to the base of the cavity.

The details of the anatomy are given in Professor Steenstrup's paper, and he shows the darting stinging threads in the skin (fig. 8).



Fig. 1. *Pales cliftoni*.

2, 3, 4, 5. *Sphenopus marsupialis*.

SPHENOPUS MARSUPIALIS. (Figs. 2, 3, 4, 5.)

Sabella (die beutelförmige *Sabelle*), Schröter, Einleit. Conch. ii. p. 591. no. 19, t. 6. f. 21.

Sabella marsupialis, Gmelin, S. N. 3751.

Sphenopus marsupialis, Steenstrup, Oversigt Kgl. Dansk. Vidensk. Selsk. 1856, p. 37, t. 1. f. 1-8; M.-Edwards & Haime, Coral. i. 287.

Hab. Tranquebar (*Johns*).

The specimens here figured were collected at Pulo Faya, in the China Seas, by Capt. Perry of the ship 'Richard Cobden,' who has kindly presented specimens to the British Museum and to the Free Museum at Liverpool.

Var. bursiformis. The body variable in shape (figs. 2-5), more or less produced and compressed behind.

Hab. Massachusetts Bay, U. S. America.

B.M.

2. SIDISIA, Gray, P. Z. S. 1858, p. 582.

Coral free, cylindrical, simple, or developing lateral basal buds, giving it a more or less branched form.

SIDISIA BARLEEI, Gray, P. Z. S. 1858, p. 532, t. 10. f. 6.

Zoanthus couchii, var., Holdsworth, P. Z. S. 1858, p. 560.

Zoanthus couchii, var. *liber*, Gosse, Brit. S. Anem. 297, t. 9. f. 9.

Hab. Orkney, Brassej Island (*Mr. Barlee*).

II. Coral attached; cells arising from a foliaceous expanded base.

3. EPIZOANTHUS.

The base expanded, foliaceous (parasitic on shells); the cells cylindrical, simple, separate from each other from the base; tentacles numerous.

EPIZOANTHUS PAPILLOSUS.

Spongia suberea (part.), Johnston, Mag. N. H. vii. 494. f. 60.

Dysidea? papillosa, Johnston, Brit. Sponges, 109. f. 18, t. 16. f. 6, 7; Gray, P. Z. S. 1858, p. 531.

Zoanthus couchii (part.), Holdsworth, P. Z. S. 1858, p. 557, t. 10. f. 3.

Zoanthus couchii, var. *diffusa*, Gosse, Brit. Sea Anem. 298, t. 9. f. 10.

Hab. Coast of England; Coast of Massachusetts, U. S. B.M.

Dr. Johnston, though he described this animal as a sponge, very justly observed that it was "nearly allied to the *Alcyonium ocellatum* of Solander (*Zoophytes*, 180, t. 1. f. 6), whatever that may be."

This species is found entirely covering some shells which are inhabited by *Paguri*, or Hermit Crabs, on the coast of Massachusetts, in North America. Specimens were collected in forty-fathom water by Capt. Mortimer of the ship 'America,' and by him presented to the British Museum and the Free Museum at Liverpool.

It appears to envelope more than one species of shell, as the form of some is much more elongated and turreted than others. But the shells are entirely destroyed, probably absorbed by the Hermit Crab to make room for the enlargement of its body; for when the coral mass is cut through, the cavity, which has all the forms of the whorls of a spiral shell, seems only to be covered with the basis of the coral, strengthened by the sandy particles that are imbedded in it.

The coral covers the shell with a smooth coat, only leaving the mouth of the shell free for the emission of the crab. This coat is scattered with distinct radiating cylindrical bodies, thickened and rounded near the upper margin; the apex when expanded is flat, with close radiating white lines, and a central circular aperture.

One of these bodies is generally placed on the apex of the spire of the shell, and another on the front end of the aperture and the back of the shell; and the sides of the spire are furnished with from three to eight or nine similar bodies, which diverge from each other. The under surface of the body (that is to say, the part of it that is trailed along the ground as the animal walks) is smooth and free from any of these cylindrical bodies of the *Actinia*. The bodies differ in length, according to their age and the position they occupy on the surface of the shell, and they always diverge from each other;

and those on the lip and the edge of the shell are generally the largest, as they are in a position where they can obtain the most nourishment. They are gradually developed from the surface of the coral that covers the shell. They first appear as a small circular spot, which enlarges and gradually raises itself above the surface of the surrounding coral until it forms a cylindrical body, which is generally considerably higher than it is broad. The adult or well-developed body sometimes breaks off from the base, leaving a circular concave scar, with pores round its circumference, which is the basis of the ovaries of the animal.

4. GEMMARIA, Duchass. & Michel. Mém. Coral. des Antilles, 55.

Mammillifera, sp.

Palythoa, sp., Milne-Edw. Coral. i. 303.

Base expanded; polypes not soldered together.

Duchassaing and Michellot describe several species of this genus; to these add

GEMMARIA? SULCATA.

Zoanthus sulcatus, Gosse, Brit. Sea Anem. 303, t. 9. f. 7, t. 12. f. 2.

Hab. Devonshire.

Tentacles twenty-two, in two rows; upper half of polypes naked.

5. PALYTHOA, Lamx. Hist. Polyp. 361; Duchassaing & Michellot, Mém. Coral. des Antilles, 53, 1860.

Palythoa A A & A A A, Milne-Edw. Coral. 304.

Cavolina, sp., Schweiger.

Corticifera, Lesueur.

Mammillifera, Ehr., Blainv.

The polypes soldered side by side.

1. PALYTHOA MAMMILLOSA, Lamx.

L. stellata, Lamx.

Alcyonium mammilloso, Solander, Zooph. t. 1. f. 4, 5.

2. PALYTHOA AXINELLÆ, O. Schmidt, Sponges of the Adriatic, p. 61, t. 6. f. 1, 2.

Polype short, broad, on an expanded base, white when dry.

Hab. Adriatic. Parasitic on *Axinella cinnanomea* and *A. verrucosa*, O. Schmidt (Sponges of the Adriatic, pp. 61, 62). Esper called the latter sponge *Spongia verrucosa*, from the presence of this polype.

Professor Oscar Schmidt described a species of *Axinella* which has circular eight-rayed stars scattered on the surface and sunk in the substance of the sponge, under the name of *Axinella polypoides* (p. 62, t. 8. f. 5). He calls these stars *oscles*; but they are very unlike the oscule of any other sponge, and I think they may be parasitic *actinioid* polypes. Mr. Bowerbank, in his 'British Sponges' (t. 20. f. 307), figures a very similar body, which he describes as

a portion of the dermal surface of an undescribed sponge from the East Indies, having numerous depressed porous areas furnished with stomata, like protective organs. Mr. Tyler, F.L.S., has kindly shown me some specimens of the sponge mounted, as a transparent and as an opaque object; and they are very like a parasitic actinioid polype; but the rays are strengthened with spicules on the surface, and on the tips with some prominent ones (which form a pencil), unlike any *Actinia* I have seen, and so they are perhaps sponges. If so, they ought to form a genus, which may be called *Astrostoma*.

III. *The coral attached; the cells arising from a slender subcylindrical base.*

6. CAROLIA.

The base slender, subcylindrical, creeping; the cell cylindrical, separate, and far apart from the base.

CAROLIA COUCHII.

Zoanthus couchii, Johnston; Couch, Cornish Fauna, iii. 73, t. 15. f. 3; Johnston, Brit. Zoophytes, 202, t. 35. f. 9 (cop. Couch); Holdsworth, P. Z. S. 1858, p. 557, t. 10. f. 4-7 (not fig. 3).

Zoanthus couchii, var. *linearis*, Gosse, Brit. Sea Anem. 298, t. 10. f. 5.

Hab. Cornwall.

IV. *Polypes forming a network, sunk in sponges; the buds arising the upper or cephalic edge.*

7. BERGIA, Duchass. & Michellot, Coral. des Antilles, 54, 1860.

Alcyonium, sp., Lamk.

BERGIA SERPENS.

Alcyonium serpens, Lamk.

Bergia catenularis, Duch. & Michel. 54, t. 8. f. 12.

Hab. West Indies.

B.M.

V. *Polypes attached, solitary, with a rather expanded base.*

8. TRIGA.

The coral subcylindrical, solitary, attached, with a rather expanded base; outer coat coriaceous, sandy, concentrically wrinkled.

TRIGA PHILIPPINENSIS.

B.M.

Coral subcylindrical, clavate, rather narrowed near the base, concentrically wrinkled; end convex, obscurely radiately striated.

Hab. Philippines, attached to small pebbles (*Cuming*).

The coral varies from an inch to an inch and a half in length.

The genera *Iluanthos* of Forbes (Ann. of Nat. Hist. v. 1840, p. 184, t. 3. f. 1) and *Peachia*, Gosse (Trans. Linn. Soc. xxi. 267), may

belong to this family, and form a section of it which has a soft thin skin.

The genus *Edwardsia*, Quatrefages (Ann. des Sci. Nat. xviii. 65, 1842), and *Solanthus* of Gosse (Ann. Nat. Hist. xii. 1853, p. 157), may also belong to this tribe, and form a section characterized by the middle portion of the skin of the body being thickened, so as to form an imperfect tubular polyperoid, into which the soft anterior and posterior portion of the body are retracted for protection.

The *Edwardsia vestita* of Forbes (Ann. Nat. Hist. viii. 244. t. viii. 1842, and xii. 42, 1843) is most probably a *Cerianthus*, which forms a tube of agglutinated sand, like many Annelides, for the base of its body.

February 28, 1867.

Dr. J. E. Gray, F.R.S., V.P., in the Chair.

The Secretary called the attention of the Meeting to several recent additions to the Society's Menagerie, amongst which were—

1. A male example of the wild Swine of *Formosa* (*Sus tairanus*, Swinhoe), received by the ship 'Island Queen,' January 17th, having been obtained for Mr. Swinhoe by Mr. Gregory, H.M. Vice-Consul at Tamsuy, and forwarded to the Society by Mr. Swinhoe.

This animal was stated by Mr. Selater to be very nearly allied to, if not identical with, *Sus leucomystax* of Japan, of which the Society had previously possessed a female specimen, and was apparently very different from the curious red pig of the savages of Formosa, of which Mr. Swinhoe had sent three examples to the Society on the 25th of October, 1866, in the 'Maitland,' and which had been spoken of as *Sus tairanus* in a former communication on the subject (P. Z. S. 1866, p. 419).

2. A pair of Saiga Antelopes (*Saiga tatarica*, Pallas), received on deposit in November 1866, and recently purchased, as being apparently likely to do well in the Society's Menagerie. A drawing by Mr. Wolf was exhibited (Plate XVII.) showing the peculiar sheep-like appearance of this singular Antelope.

Mr. W. H. Flower exhibited a skull of the newly described Tapir of Panama (*Elasmognathus bairdi*, Gill, Pr. Acad. Sc. Phil. 1866, p. 183), belonging to the collection of the Royal College of Surgeons, and pointed out the characters which distinguish it from *Tapirus americanus* and *T. malayensis*, the most prominent of which was the complete osseous septum between the nasal apertures. Mr. Flower did not propose to give any further description of this animal at present, as it was understood that Professor Gill was preparing a complete account of it. The skull had been obtained by a collector at one of the stations of the Panama Railway.